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SUMMARY

OF THE

TRANSACTIONS

OF THE

COLLEGE OF PHYSICIANS

OF

PHILADELPHIA.

VOLUME III.

From November 6, 1849, to October 1, 1850, inclusive.

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SUMMARY

OF THE

TRANSACTIONS OF THE

COLLEGE OF PHYSICIANS

OF PHILADELPHIA.

FROM NOVEMBER 6, 1849, TO JANUARY 15, 1850, INCLUSIVE.

Stated Meeting, November 6th, 1849.

DR. BOND in the chair.

Present, forty-four members.

Dr. COATES presented, at the meeting in October, as a donation to the Pathological Cabinet, a Microscope, made in Philadelphia, of low magnifying power; which donation was neglected to be noticed in the minutes of that meeting.

EDMUND LANG, M. D., and THOMAS S. REED, M. D., were duly admitted as Fellows.

The Committee of Publication reported that they had issued the Eighth Number of Vol. II of the Summary of Transactions, which, as it completes the volume, they had accompanied with an Index and title-page.

The Committee on Museum reported that they had had a case put up in the Hall for the accommodation of pathological specimens, and that they had received, as a donation, a number of preparations, among which were several very interesting ones from

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the cabinet of the late Dr. Joseph Parrish, presented by his son, Dr. Isaac Parrish; a descriptive list of which was read by the Curator.

The Committees on School Discipline, on the State Society, and on the Pathological condition of the Intestinal Mucous Membrane in Cholera, not being prepared to report, were continued.

On motion of Dr. Hays, the Committee on the Treatment of the Insane in the Blockley Alms-House, were discharged from the further consideration of the subject.

A communication was received from Dr. David Stewart, Secretary of the Board of Library Directors of the Maryland Medical and Chirurgical Society, acknowledging the receipt of the Summary of Transactions of the College.

The following gentlemen were elected the Committee of Publication for the ensuing twelve months:

D. Francis Condie,
Isaac Parrish,
Samuel Jackson.

On motion of Dr. Fox, it was *Resolved*, That a Committee of five be appointed to ascertain and report to the College, the probable cost of a lot of ground, and the sum necessary to erect thereon a building adapted for the accommodation of the College, and also to suggest such a plan as they may deem best adapted to raise the funds required for the purchase of said lot, and the erection thereon of a suitable building.

Drs. Fox, Wood, Hays, Paul, and C. D. Meigs were appointed the committee under this resolution.

Dr. Bache presented and read the following

OBITUARY NOTICE

OF THE LATE

DR. THOMAS T. HEWSON.

Thomas Tickell Hewson was born in London, on the 9th of April, 1773. He was the second son of William Hewson, the celebrated anatomist and physiologist, who died of fever, occa-

sioned by a wound received in dissection, on the 1st of May, 1774, in the thirty-fifth year of his age, when the subject of this notice was but one year old. His mother was Mary Stevenson, daughter of Mrs. Margaret Stevenson, a widow lady, in whose house Dr. Franklin resided, while in London as agent of the Colony of Pennsylvania. She was a woman of cultivated mind and fine judgment. It was her good fortune to enjoy the friendship of Dr. Franklin to the day of his death; and her published correspondence with him evinces as well the extent of her acquirements, as the elegance of her style.

In March, 1781, at the age of eight years, young Hewson entered the school of William Gilpin, at Cheam, near London, where he received the rudiments of his education, and where he continued to reside until the summer of 1786, with the exception of five months in the winter of 1784–85, which he spent with Dr. Franklin at Passy. He showed much aptitude for learning, and was called "little inquisitive Tom," and "all soul and no body." His mother, writing to a friend in September, 1783, remarks of him that "he bids fair, by the powers of his mind, to do honour to his name; for he outstrips all his competitors in learning." In the summer of 1786, Mrs. Hewson removed to America with her children, and soon after her arrival, Thomas entered the Junior class of the College of Philadelphia, afterwards the University of Pennsylvania. He was prepared to graduate in 1788, but remained another year, in compliance with the advice of Dr. Ewing, the Provost of the College, who wished him to postpone his graduation on account of his youth. In July, 1789, he took the degree of Bachelor of Arts, speaking at the Commencement with much applause, and immediately afterwards began his medical studies with Dr. John Foulke. After having pursued his studies for nearly five years in Philadelphia, he returned to England in June, 1794, and, in the month of September following, entered St. Bartholomew's Hospital, as one of the two house surgeons. In November, 1795, he went to Edinburgh, where he remained until July, 1796, when private business compelled him to return to London. In that city he was detained until July, 1800, when he returned to America. During his absence abroad, he had the misfortune to lose his mother, who died on the 14th of October, 1795, at Bristol, Pennsylvania, in the fifty-seventh year of her age.

Thus, after a course of medical and surgical studies, embracing a period of eleven years, he returned to America to enter upon the practice of his profession in this city. In November, 1806, he was appointed physician to the Walnut Street Prison, and served the Institution faithfully until March, 1818, when he resigned. His services in this Institution were signalized by his devoted attentions to the prisoners during the prevalence of a dangerous and malignant typhus, which broke out in December, 1817,

and continued until the succeeding March. So highly did the Inspectors of the Prison estimate the services of Dr. Hewson, that they presented to him a handsome silver vase, bearing the following inscription:

A Tribute to Humanity.

THE INSPECTORS OF THE PRISON

OF THE

CITY AND COUNTY OF PHILADELPHIA

TO DR. THOMAS T. HEWSON;

Commemorative of his distinguished professional services during the prevalence of malignant typhus fever in the winter of 1817-18.

The correspondence which passed between the Committee of the Inspectors of the Prison and Dr. Hewson, on the occasion of the presentation of the vase, does equal credit to both parties.

In September, 1811, Dr. Hewson was elected one of the surgeons of the Philadelphia Alms-House, an appointment which he held for many years. In 1815, he published a translation from the French of the valuable work of Swediaur on Syphilis. In December, 1816, he was elected Professor of Comparative Anatomy in the Department of Natural Science of the University of Pennsylvania; but it does not appear that he delivered a course on the subject until the spring of 1818. It is probable, also, that this was the only course he gave under his appointment. Knowledge and zeal are not the only prerequisites of success in teaching a branch of science. The importance of the subject must be appreciated by a sufficient number of votaries to afford the teacher a class of pupils; for, without recipients of his knowledge, his fitness to impart instruction must be in vain.

In January, 1817, he was appointed physician to the Orphan Asylum, a situation which he held for twenty years; and in November, 1818, he was chosen one of the surgeons of the Pennsylvania Hospital, in the place of Dr. Dorsey, deceased, and continued to hold the appointment until May, 1835, a period of nearly seventeen years, when he resigned.

Dr. Hewson largely contributed to the formation and revision of our National Pharmacopœia, in fulfilment of various appointments, made chiefly by this College. Although the project of forming our present National Pharmacopœia originated with Dr. Lyman Spalding, who submitted his plan to the New York County Medical Society in 1817; yet it is due to this College to recall to recollection its early though unsuccessful efforts to accomplish the same desirable object. On the 1st of May, 1787, Dr. John Morgan proposed to the College to form a Pharmacopœia for Penn-

sylvania. This proposition does not appear to have been acted upon until June of the following year, when a Committee was appointed to consider it. In April, 1789, a draught of a letter was reported, to be addressed to the "most respectable practitioners of the United States," in which the importance of a National Pharmacopœia is referred to. This appears to have elicited a communication from Dr. James Tilton, of Delaware, addressed to the College the succeeding year, containing suggestions in relation to the formation of the work. In 1791, Dr. Benjamin Smith Barton was appointed on the Pharmacopœia Committee, and in November, 1792, the Committee made its first report. The subject was allowed to sleep until 1794, when Dr. Parke was added to the Committee. Nothing appears on the minutes respecting the Committee until April, 1797, when it made its second report; and, in the following June, the report being again read, the recommendation of the Committee was adopted, "that an enumeration be made of all medicinal substances and pharmaceutical processes, as shall appear useful and proper to compose the intended Pharmacopœia." Drs. Griffitts, Barton, and James were appointed to make the enumeration; but it does not appear by the minutes that they ever fulfilled the duties of their appointment.

Nothing further appears on the minutes of the College in relation to a Pharmacopœia until February, 1819, when the College acted on the Circular of the Medical Society of the State of New York, setting forth Dr. Spalding's plan, which, by resolution, was approved of. This plan contemplated the assembling of four district Conventions, severally composed of medical delegates from the Northern, Middle, Southern, and Western States, each charged with the duty of compiling a Pharmacopœia, and of electing one or more delegates to a general Convention, to meet at Washington City on the 1st of January, 1820, to which the district Pharmacopœias were to be referred, with authority to form from them a single national work. In this important enterprise, Dr. Hewson took a leading part. He was appointed by this College one of the delegates to the Convention of the middle district which met in Philadelphia; by the middle district Convention, one of its delegates to the general Convention at Washington; and by the latter body, as a member of the Committee of Publication, which assembled in New York. Thus, in every stage of its preparation, the first edition of our National Pharmacopœia received the benefit of his efficient services.

The National Medical Convention provided for the revision of the Pharmacopœia at the end of ten years. In view of this revision, the College, in April, 1828, appointed a Committee, consisting of Drs. Hewson, Hartshorne, and Wood, to report amendments, corrections, and additions to the work; and at a subsequent period

the writer was added to the Committee. This Committee held more than one hundred meetings at Dr. Hewson's house, and, in November, 1829, made its final report, in the form of a draught of a Pharmacopœia, fully written out, and prepared for the press. The writer can bear testimony to the efficient services, rendered by Dr. Hewson as chairman of this Committee. The College adopted the draught, thus prepared, and directed it to be presented by its delegates to the Washington Convention of 1830, as a contribution towards the revision of the National Pharmacopœia. The draught was adopted by the Convention, with the condition that it be submitted to a Committee of Revision and Publication, consisting of a chairman and two members from each of the eight principal cities of the Union. Dr. Hewson was appointed chairman of this Committee, and was authorized by the College to have a sufficient number of manuscript copies of the draught prepared for transmission to the distant members of the Committee, with a view to obtain their written comments thereon. These having been received, the Committee met in Philadelphia, considered the suggestions they contained, agreed upon the final amendments, and superintended the publication of the work.

Nor did the labours of Dr. Hewson, in connexion with the Pharmacopœia, terminate here. In May, 1838, preparatory to the then approaching decennial revision, Dr. Hewson was again appointed chairman of the Committee for revising the work. The labours of the Committee on this occasion continued through a period of twenty months, and their result was placed before the College in a report, made at a special meeting, held in December, 1839. The report was accompanied by a draught of a revised Pharmacopœia, which, upon being presented to the Convention of 1840, was adopted as the basis of the future work. Dr. Hewson's labours, as chairman of this Committee, form the last official services, rendered by him in connexion with our National Pharmacopœia.

On the 17th of August, 1820, during the epidemic prevalence of yellow fever in this city, Drs. Hewson and Chapman offered their services to the Board of Health, to attend the yellow fever hospital. This offer was accepted; and on the 19th, the Board, on the representation of the physicians as to the entire inadequacy of the temporary hospital, resolved to open immediately the east wing of the City Hospital, at Bush Hill, for the reception of patients. After the treatment of thirty-one cases, the hospital was closed on the 9th of October following. In a report made by the attending physicians to the Board, they gave it as their opinion that the yellow fever of that season presented more of the character of typhoid malignity than in any preceding year, and recorded their impression that, of the different remedies they had employed, the oil of turpentine had the strongest claims to

attention. In the month of December following, the City Councils addressed a number of queries to this College in relation to the proper measures to be taken to secure the city from the invasion of malignant fever. Drs. Hewson, Griffitts, and Emlen were appointed a Committee to answer these queries; and in their report, which was adopted by the College, they strongly recommended, among other measures, the prosecution of the plan, then in contemplation, "for removing the whole of the buildings from the east side of Front street, inclusive, to the river, beginning at Vine and ending at South street, according to the original plan of William Penn, the wise and intelligent founder of the city."

In 1822, Dr. Hewson established a private medical school in Library street, consisting of himself as teacher of Anatomy and the Practice; Dr. Thomas Harris, of Surgery; Dr. Meigs, of Physiology and Midwifery; and the writer, of Chemistry and Materia Medica. The school continued with this organization for several years, during which period Dr. Hewson gave an annual course of lectures on Anatomy.

On the 5th of July, 1832, the Board of Health established a "Cholera Medical Board," composed of twelve physicians from the city and districts, and the port physician. On the 10th of July, Dr. Hewson was appointed a member of this Board, and, at its first meeting, was elected its president. On the organization of the several cholera hospitals and stations, he was appointed physician-in-chief, which situation he filled until the dissolution of the Board and the closing of the hospitals on the 30th of October following. His attention to the responsible duties of his appointment was unremitting. He visited daily the City Hospitals, under the immediate care of his assistants, and was ever ready to render his professional aid to the several hospital physicians, when requested to afford it. His whole intercourse with his colleagues in the Board, and with the physicians of the several hospitals, was marked by dignity and urbanity, which commanded their respect, and at the same time attached them to this person. The discretion with which he exercised his authority, is well described in the following extract from a letter, received by the writer from a friend, who was one of his colleagues during the existence of this epidemic, and well acquainted with his services. He remarks, that "though the duties of his station were sufficiently delicate, and required of him, on more than one occasion, an exercise of authority, and a reversal of the decision of the physicians placed under his superintendence, yet not a single angry feeling was excited; and in no instance was there an appeal from his decisions made to the Board. So judiciously and kindly was his authority exercised, that the self-esteem of his adjuncts was never wounded."

At the close of his services, the Board of Health made him a

handsome pecuniary acknowledgment; "not," they remark, "as a compensation for the invaluable services rendered by him to the suffering poor of the city and county during the prevalence of the recent epidemic; but as an expression, in a pecuniary form, of their high estimate of his unremitting attention to the duties of a situation, at once onerous and responsible, which he was induced to accept, at their request, at a season of uncommon alarm and excitement."

Dr. Hewson, during the course of his long life, received scientific honours from several societies and institutions. He was elected a member of the Edinburgh Medical Society in 1796, of the American Philosophical Society, and of this College, in 1801, of the Philadelphia Medical Society in 1804, of the Philadelphia Linnæan Society in 1813, and of the Medical Society of the District of Columbia in 1821. In 1822, the honorary degree of Doctor of Medicine was conferred on him by the Medical Department of Harvard University. He was a contributor to the Philadelphia Dispensary, served the Institution for many years as consulting surgeon, and was one of its managers at the time of his death. For many years he was an active member of the American Philosophical Society, and officiated either as one of its secretaries or curators from 1803 to 1822, inclusive. His services in connexion with this College need not be dwelt upon; as they are known to most of the Fellows. He filled successively the offices of secretary and censor, with the exception of one year, from July, 1802, to April, 1835, when he was chosen vice-president; and in the month of July following, on the death of Dr. James, he was elected president, which office he continued to hold to the time of his death, embracing a period of more than twelve years. It is fresh in the memory of all of us, with what dignity he filled the chair—a chair which had been graced by a Redman, a Shippen, a Kuhn, a Parke, and a James.

Dr. Hewson was not a voluminous writer. He published no formal work; but it is understood that he left a manuscript treatise on the primary forms of the venereal disease, and on strictures of the urethra, which, it is to be hoped, will be prepared for the press by his son, Mr. Addinell Hewson, who has adopted the profession of his father, and is now far advanced in his medical studies. Dr. Hewson's style has the merit of clearness and precision, qualities essential to good medical writing. The following list comprises all his papers and communications, so far as they are known to the writer:

Case of Small Pox, supervening on Vaccination. Read before the College, April 6th, 1802. Unpublished.

Case of Unusual Tumefaction, terminating in Extensive Suppuration. Read before the College, May 2d, 1809. Unpublished.

Some Experiments on the Coagulation of the Blood, when out of the Body. Published in the Eclectic Repertory for January, 1811.

Case of Ecthyma Cachecticum, with Observations. Published in the North American Medical and Surgical Journal for January, 1826.

Case of Strangulated Umbilical Hernia, successfully operated upon. Published in the Medical Recorder for January, 1827.

On the Mechanism of Preternatural Joints, and on the Means of Cure. Read before the College, October 2d, 1827, and published in the North American Medical and Surgical Journal for January, 1828.

Remarks on the Eruptive Disease, produced by the Internal Use of Balsamum Copaibæ. Read before the Kappa Lambda Society, and published in the North American Medical and Surgical Journal for January, 1828.

On the Protective Power of Vaccination, and on the late Epidemic Varicella. Read before the College, April 1st, 1828. Unpublished.

History of a Case of Puerperal Convulsions. Read before the College, and published in the North American Medical and Surgical Journal for April, 1830.

On Varicose Veins, with the History of a Case, successfully treated by Pressure and Iodine Ointment. Read before the College, October 29th, 1833. Unpublished.

Case of Martha Thimble. Read before the College, November 22d, 1836. Unpublished.

Communication on the Cerebral Tendency of the Diseases of the Autumn of 1844. Made to the College, November 5th, 1844, and published in the Summary of its Transactions.

Communication on the Cholera Morbus of 1846, and on the Unusual Frequency of Rice-water Discharges in the Disease of that year. Made to the College, September 1st, 1846, and published in the Summary of its Transactions.

In connexion with this list, it may be proper to mention, that the reports, made to the College on Meteorology and Epidemics, were always prepared by Dr. Hewson.

For the last three years of his life, Dr. Hewson suffered from uneasiness about the neck of the bladder, which caused the motion of his carriage to give him considerable pain. From time to time, especially after fatigue or exposure to sudden changes of temperature, his usual symptoms were aggravated, and he suffered painful attacks, attended with hæmaturia. The chief cause of his sufferings was ascertained to be an enlargement of the prostate, which, in connexion with the morbid condition of the bladder, sufficiently explained his symptoms. About two weeks before his death, he was seized with an attack of his disease, more

severe than on any previous occasion. Thirty-six hours before dissolution, he became somewhat comatose; but up to that time his intellect had been perfectly unclouded; and, though fully aware of the approach of death, he manifested the most perfect calmness and resignation. The fatal event took place on the 17th day of February, 1848, in the seventy-fifth year of his age, after an honourable career of professional exertion of nearly fifty years.

On the 5th of November, 1812, Dr. Hewson married Emily, second daughter of the late John Banks, Esq., of Washington City, by whom he had twelve children. Of these, seven sons and three daughters survive him. On the 11th of January, 1837, he met with a severe domestic calamity, in the death of his wife, after a matrimonial union of more than twenty-four years.

Dr. Hewson stood high as a practitioner. His professional education in England and Scotland was shaped with a particular view to surgery; but, upon his return to Philadelphia in 1800, he entered upon the practice of medicine as well as of surgery; following, in this respect, the usage of the country of his adoption. In both branches of his profession, he soon became eminent, enjoying, to the close of his life, a gratifying share of public confidence. In all that related to the ethics of the profession, he was scrupulously correct. His intercourse with his professional brethren was marked by great suavity of manner. When called to consult with junior practitioners, his deportment was such as to place them at once at their ease. There was no assumption of superiority, no attempt at dictation; but, on the contrary, a delicate regard was manifested for their equal professional rights.

Such is an imperfect sketch of the life of our late President. He has descended to the tomb, and we feel the void occasioned by his absence from amongst us. But he has left us his example of professional excellence and private worth. Let us emulate his virtues, as the best homage we can pay to his cherished memory.

On motion of Dr. Condie, it was *Resolved*, that five hundred extra copies of the obituary notice of Dr. Hewson be printed, and placed at the disposal of Dr. Bache.

The College then, on motion of Dr. Gibbons, adjourned to Tuesday evening, the 20th instant.

Adjourned Meeting, November 20th, 1849.

Dr. Meigs, Vice President, in the chair.

Present, thirty members.

Dr. Hays presented to the Library the following works:

Die Erkältung und die Erkältungskrankheiten, Von Dr. R. Küttner.

Ueber das Irreseyn, oder anthropologisch-psychiatrische grundsätze, Von Dr. Gustav Blumröder.

Grundzuge zur Dipsobiostatik, Von Dr. Fr. Wilh. Lippich.

Briefe eines Arztes über den ärztlichen beruf und die heilkunde Leipzig, 1842.

Die Kolensauren-gas-quellen zu Meinberg, Von Dr. K. Piderit.

Geschichte der Gesundheit und der Krankheiten, Von Dr. J. M. Leupoldt.

Ueber die historische Umwandelbarkeit der Natur und der Krankheiten, Von Dr. A. Mühry.

The amendment to the 11th Section of Chapter II of the Ordinances and By-Laws, proposed at the meeting in October, was taken up and adopted.

The Committee on Museum announced that they had received from Dr. Parrish a donation of two wax casts; one representing a malignant ulcer of the back of the hand; the other, a melanosis of the great toe.

Dr. Bond presented for the consideration of the Fellows, a modification, devised by him, of the ordinary midwifery forceps, consisting in an adjustment of the joint, by which the two blades, when locked, are permitted to rotate upon each other within certain limits, that can be increased or diminished by means of a screw. This modification, he believed, would be found useful, by permitting the application of the instrument, and the ready locking of its blades, in certain cases in which this could not be effected by the forceps in common use.

Dr. C. D. Meigs remarked that he was desirous of presenting to the College, some views which had been suggested to his mind in relation to the cause of tuberculosis, and yet he almost feared to present them, because he believed them to be entirely new. Such views are always received with doubt, often with aversion. The views he is about to lay before the Fellows, have been the result of

much thought; he does not, however, present them as principles established, or in relation to the truth of which, his own impressions are absolutely fixed. He has not had the leisure to make any extended series of observations in test of their accuracy; but feels inclined to believe, that when so tested, they will be found to contain the true explanation of tuberculosis.

It is a singular circumstance, and one calculated to excite our astonishment, that there should be deposited in the tissues of the living body, granules—minute, opaque particles, enveloped in special sacs—which may sleep for years; the general health suffering apparently no interruption, even when thousands of these granules are disseminated throughout the tissues of the most important organs; but suddenly they take on morbid action, which carries disease, terminating sooner or later in death, throughout the organism. Now what is it that gives rise to these depositions? What is the true cause of tuberculosis? Has it been satisfactorily explained? Are you satisfied with the words, strumous, strumous diathesis? These convey no definite idea, no satisfactory explanation. They do not point out whence the deposits come, or how they occur, nor what they are. Tuberculosis often occurs after violent inflammatory diseases; in individuals debilitated by exhausting discharges; and, in short, it is liable to take place, after all causes which impede the movement of the blood. He was once present at a post-mortem examination of a body, in which there existed a large coagulum of blood in the right auricle of the heart; it nearly filled the cavity; the upper portion was rounded, smooth and polished; the lower portion was prolonged and penetrated, through the auriculo-ventricular foramen, into the right ventricle, presenting there a ragged appearance, as though it had been gnawed by a rodent, it having been evidently threshed, and beaten by the chordæ tendiniæ of the heart into minute particles. It appeared to him, upon examining the condition of this heart clot, that the small comminuted fragments into which a portion of it had been reduced, must have been carried by the torrent of blood passing from the heart through the pulmonary artery, into the lungs, and there become arrested when they reached the commencement of the capillaries. Fragments of the size of a pin's head could be forced into the arterioles. In some of the arterioles, but a single fragment would gain admittance, in others, there would pass one, two, or more. But all of them would become arrested in the more minute blood vessels, and there being left in contact with the endangium, the common lining membrane of the whole arterial system, what becomes of the fragments? It may become compressed, but cannot be driven onward by the action of the blood behind it, as this is impinged upon it by the force of the heart; as it cannot become dissolved, or decomposed, or absorbed, it seemed to him that it must remain; gradually, however,

pressing out laterally that portion of the endangium with which it is in contact into the adjacent cellular texture, and thus forming for itself a special sac; becoming in time, a tubercle. In this quiescent state it may remain for years, but should inflammation occur in the lungs from any cause, then do these arrested and encysted coagula become the cause of extensive disorganization in the surrounding tissues, and of death. That the clots formed in the heart become, by the action of that organ, broken into minute fragments, few, Dr. Meigs supposed, would deny, and the frequency of the occurrence of heart clots, is unquestionable. They are the cause of the cessation of life in many cases of scarlatina, in violent pneumonia, in deliquium induced by extensive hemorrhages or exhausting discharges; in angionitis, and in many other diseases. In all cases in which a partial stasis of the blood takes place, this is disposed to coagulation. It ceases to be blood the moment it ceases to be in motion; it then assumes a solid form, and becomes to a certain extent, in the condition of a foreign body as to the tissue with which it is in contact. In some constitutions, partial stasis of the blood is more liable to occur than in others, and in these, the utmost care is demanded to prevent the occurrence of such stasis, and thus guard against as well its immediate, as its remote effects. The views of the cause of tuberculosis thus thrown out for the consideration of the Fellows, Dr. Meigs did not wish to be considered as his settled convictions. They would demand for their establishment and perfection, further investigations, which his time has not as yet permitted him to enter upon.

Dr. Condie remarked, that the views just announced by Dr. Meigs as to the origin of tubercles, were certainly, to him at least, perfectly novel, and in the manner in which they have been presented, it is no easy task to enter upon their examination. Guided by a strict logic he might content himself by simply denying their validity, and demanding of their author the production of the facts by which their correctness is established. Dr. Meigs cannot, certainly, consider the fact he has noticed, as the one which first suggested the hypothesis to his mind, as proving any thing. We might demand the evidence of the frequent occurrence of the heart clot during life, and that it produces, when it does occur, so slight disturbance of the circulation, that from it, tuberculosis, admitting Dr. M.'s hypothesis to be correct, may occur to some extent, even in the lungs, without any very manifest impairment of the health of the patient. We might ask the evidence that tuberculosis is in any case, whether in the fœtus in utero, in the infant at the breast, at puberty, or in adult life, preceded by the formation of a coagulum in the right cavities of the heart; that tubercles invariably occur at the commencement of the capillaries; and that they are enclosed in a cyst formed of the common

lining membrane of the blood vessels. Is tuberculous matter identical with coagulated blood, or can blood when removed from out the circulation, and allowed to coagulate in connection with the living tissues, become changed into tuberculous matter? It does not certainly undergo such a change when a portion escapes from the vessels, and becomes effused either into one of the natural cavities, or into the substance of the organs. Again, if tubercles are fragments of coagulated blood arrested at the commencement of a vessel too small to permit their further passage, how are we to account for the occurrence of tubercles on the free surfaces of the serous and mucous membranes, or in the substance of the brain where they are often met with of a very large size? When an artery is tied, a stasis and coagulation of blood is produced above the ligature, but tuberculization is not, so far as we are aware, produced by minute portions of the coagulum thus formed, being carried, by the collateral branches of the obliterated vessels, as far as their bulk will permit them to penetrate. The hypothesis of Dr. Meigs appeared to Dr. C. to be surrounded by so many difficulties, that he can scarcely believe it will be received with much favour; though it may possibly appear in a very different point of view when the whole of the evidence by which it is sustained, has been elicited by the future investigations of its author. Tuberculosis has appeared to Dr. C. to be evidently the result of a defective nutrition; the proper materials for the growth and repair of the various tissues of the body not being furnished in sufficient quantity, or in a regular manner. Tuberculous matter is, in his opinion, a morbid deposit from the blood, not within the cavities of the blood vessels, but in the tissues of the organs.

Dr. Gibbons remarked, that the hypothesis of Dr. Meigs was certainly a very ingenious one; but in its present form he suspected it would find few willing to adopt it. He was pleased, however, that Dr. Meigs had brought it forward; such speculations, though they may not stand the test of investigation, were not always unproductive of beneficial results; they often excite inquiries by which the most important facts have been developed. Dr. Meigs's theory of tuberculosis struck him as being altogether too mechanical. Can we suppose that a mechanical obstruction of an arteriole, produced by a substance so perfectly innoxious as the blood in a state of coagulation, should give rise to an amount of disease and disorganization in an organ, such as takes place in tuberculosis? Bodies entirely foreign to the human tissues, as particles of lead, of iron, of carbon, and the like, may, we know, remain imbedded in the living organs for years, without exciting even uneasiness, much less disease. Dr. Meigs, from a single fact, infers that the coagulation of the blood in the heart, and the subsequent disintegration of the clot thus formed, is the

cause of tuberculosis; but what evidence have we that persons who die of consumption are more liable to the formation of a heart clot than those who have not throughout a long life presented a single indication of tuberculosis in any of their organs? What is the reason, if the heart clot be of such frequent formation, and if it may so readily be broken up and cause obstruction of the arterioles, thus giving rise to the formation of tubercles, that the latter cannot be produced in the members of certain families, while in all the members of other families, tubercles occur without any evident exciting cause? Take a case of fatal tubercular meningitis; upon dissection, you find tubercles not in the meninges of the brain alone, but also in the lungs and perhaps in other organs, while other portions of the body are free from any trace of them. Now how is this exemption to be accounted for under the action of a cause so general as the passage of minute coagula of blood from the heart through the blood-vessels, until they arrive at arterioles of too small a calibre to admit of their passage through them?

Dr. Pepper would inquire whether Dr. Meigs supposed the disintegration of a coagulum formed in the heart to be the sole cause of tuberculosis. There is nothing impossible in the theory advanced by him, if we receive it merely as accounting for one of the causes which concur to the formation of tubercles in the predisposed. It is very certain, however, that in those who labour under organic disease of the heart, and in whom the heart clot is so commonly met with, we seldom detect tuberculization of any of the organs. In cases of aneurism, also, the blood never undergoes a change by which it is converted into tuberculous matter. As has been correctly observed by Dr. Gibbons, the arrest of a minute coagulum of blood in an arteriole, might certainly obstruct the circulation at that point, or cause the blood to take a circuitous course; or inflammation may result, and adhesions being formed, the clot may become organized. An individual receives a blow upon the abdomen, inflammation occurs, and then albuminous effusion takes place; but if the patient be not of a diathesis predisposing him to tuberculosis, tubercles will not follow.

Dr. Meigs replied, that he was not prepared to assert that the formation of a heart clot, though the most common, was the only cause of tuberculosis. All that he contended for, was that tubercles were portions of coagulated blood arrested in the orifices of the minute blood vessels, and enveloped in a cyst formed originally out of the endangium. In many diseases there takes place, as is well known, somewhere in the course of the blood vessels, an exudation of lymph; well then, in such cases, he wanted nothing more than that portions of this exudation should be carried back to the heart, and from thence

be driven forward, through the pulmonary vessels, into the lungs, and there become arrested by the capillaries, to account for the formation of tubercles. Thus arrested, the coagulum whether of the blood itself or of its exudation corpuscules, cannot become organized; it is strictly a foreign substance as to the tissue with which it is contact: nor can it become absorbed, for no one has as yet demonstrated the existence of absorbents in the endangium; it must remain the source of mischief whenever the part in which it exists shall become the seat of inflammation. An infant receives a shock from a fall, he faints in consequence, a stasis of the blood occurs, and in two or three weeks the infant is attacked with vomiting, fever, strabismus, stupor, and the other symptoms of meningitis, and upon dissection, tubercles of the meninges of the brain are detected. But, Dr. Meigs remarked, the tubercles, as they have been denominated, in these cases, have not the appearance of tubercles as they occur in other organs. He has examined them by the aid of a powerful microscope, and they appeared to him rather to be portions of effused and transferred fibrine, than true tubercles.

The hereditary nature of tubercular disease forms no objection to his views. He can as readily conceive of an inherited tendency to stasis, and consequent coagulation of the blood, as of hereditary red hair, or a hereditary conformation of the nose or other feature. Dr. Meigs could not agree with Dr. Pepper as to the unfrequent occurrence of disease of the heart, in connection with tuberculosis. In young females towards the period of puberty, in consequence of a loss of hæmatosic force, the muscles of the heart become flaccid, the circulation enfeebled and irregular, and all the symptoms of anemia make their appearance. Now this condition of things is, in a large number of cases, succeeded by consumption; and they are precisely such as are liable, when neglected or mismanaged, to give rise to the heart clot. It is not every one who faints that has a heart clot. Tubercles may be developed whenever from any cause, the endangium becomes inflamed. The exudation thus produced will give rise to tubercles, in the same manner as coagula of blood. It is not the substance but the form of the offending matter which produces the mischief. Dr. M. repeated that objections to his views might be adduced, which he would find it difficult now to answer. He has not as yet had the time to undertake the series of observations by which its truthfulness is to be tested. He has brought it forward in its present state, to elicit from the Fellows their opinions in relation to it, and, if possible, to enlist some of them in its investigation at the bed-side of the sick, and by careful post-mortem examinations after death. He was aware that upon its first annunciation it would meet with little favour; all he asks is, that it should not be rejected without a mature and careful examination.

Dr. Gibbons remarked, that he had been surprised to find an announcement that twenty-six deaths from consumption had occurred in the city of New Orleans within the last two weeks; he had supposed that in that city the disease was one of rare occurrence; that it was one of those maladies endemical to cold and very changeable climates, and a removal to a Southern climate like that of New Orleans, was calculated to arrest its development. According to his experience, consumption is of most frequent occurrence in the female sex, not excepting those in good circumstances. There appeared to him to be a hereditary predisposition to the disease, without which its ordinary exciting causes have little or no efficiency in its production. That it runs in certain families is a fact notorious to every practitioner; some families have become rooted out by it. Sedentary and civic life would seem to be favourable to the development of the disease, while an active life in the country is calculated to arrest it, if not to destroy the predisposition to it. To the father of a family of many children, all of whom, save one son, had fallen victims to consumption, Dr. G. strongly urged the removal of the survivor to the country. A farm was bought for him, and he undertook the management of it; the consequence was, that in him the development of the disease was arrested, and he is now a robust man.

Dr. Condie could not join in the surprise expressed by Dr. G. at the announcement of twenty-six deaths from consumption in New Orleans within two weeks. The supposition that consumption is not a disease of warm climates, has been shown, by accurate statistics, to be unfounded. In the leading Southern cities of our own country, the disease is of very frequent occurrence. The natives of even the vaunted localities of Madeira, Italy, and the South of France, to which it was the common practice, not long ago, to send patients predisposed to consumption for a renewal of their health, have been found liable to the disease, if not in the same ratio as those of more northern and variable climates, at least to an extent sufficient to prove that warmth and comparative equability of temperature are no protectives from its incursion and deadly march. Since more attention has been paid than was formerly done, to the collection of correct statistics, consumption has been shown to be the disease rather of civilized life, than of locality or climate. There can be no doubt that in a large number of cases, the predisposition to consumption is hereditary, still Dr. C. is convinced that the disease may be acquired by whatever has a tendency to lower gradually the energies of the living organism, and to impair hæmatosis and nutrition. Hence long continued sedentary occupations, in-door confinement, particularly in narrow ill-ventilated apartments, insufficient nutriment, close mental occupation, unbroken by relaxation and active exercise.

anxiety of mind and the like, especially in the young, may produce consumption, where the constitution has inherited not the slightest tendency to the disease. It has been supposed to be the especial disease of the more enlightened and intelligent classes; this is likewise an error which has resulted from a neglect of accurate statistics. The poor and depraved of nearly all large cities are much more liable to consumption than the wealthy and intelligent; let the annals of our alms-houses and our prisons be consulted, and this will become apparent. In examining the bodies of the children of that portion of our population who inhabit the small, ill-ventilated houses of the narrow courts, lanes, and alleys of our city and its suburbs, Dr. C. has found, in the greater number of instances, whatever may have been the disease by which their death was occasioned, tubercles to exist in many of the organs, including the lungs. In regard to the treatment of consumption, Dr. C. had but little to say. He was convinced that no treatment would be successful, unless the patient were subjected to those hygienic influences which are calculated to improve the vital energies of the organism, to promote healthy hæmatosis, and active regular nutrition of every tissue and organ of the body. That active daily exercise, in the open air, on foot, or on horseback, plain, wholesome and sufficient food, and pleasurable excitement, confined within proper bounds, of the mind, has prevented the development of the disease in the predisposed, or even arrested its progress in its earlier stages, he has seen a sufficient number of facts to convince him. Some twenty-five years ago, Dr. C. was consulted by a young man labouring under the symptoms of incipient phthisis; tubercles had already been developed in the upper portion of the lungs. He was a journeyman saddler by trade, with a wife and family to support by his daily labour, carried often far into the night. He was candidly told by the Doctor that little or no benefit would be derived from any treatment, unless he could change his occupation for one which would enable him to take active daily exercise in the open air. This change he supposed, at the time, to be impossible for him to make, and after a short attendance, the Doctor discontinued his visits, and entirely lost sight of him. About ten years afterwards, the Doctor was accosted in the street by a person of a fine robust, and healthful appearance, who made himself known as the very consumptive patient whom ten years previously he had seen bending over his work, pale, emaciated, with a short quick respiration, and a frequent, dry, harassing cough. The Doctor was surprised at the change which he had undergone, and inquired of him how that change had been effected. He replied, that after the Doctor had discontinued his visits, finding himself getting daily worse, and less able to work at his trade, he had seriously reflected upon what had been said in regard to a change of occupation, and following out the Doc-

tor's advice, he had engaged himself to a vender of oysters, to haul them about the streets, with a horse and cart. Though much exposed to the weather, he soon found his health and strength to improve; whilst thus occupied, he was induced to go to a neighbouring city to drive a dray for a merchant, by whom a capital was advanced to him to purchase a dray and horse for himself, and as he had few competitors in his business, he prospered in a pecuniary point of view, while his health at the same time, became fully re-established. Dr. C. did not adduce this case as an exemplification of the proper course to be pursued in every attack of consumption, but as an example of the powerful influence exerted over the early manifestations of the disease, by changing a sedentary, indoor occupation, requiring a constrained position of the body for many consecutive hours, for active exercise out of doors, even when attended with much exposure; an insufficient diet for one more abundant and nutritious, and no doubt, also, cheerfulness and confidence of mind for the cheerless, depressing feelings resulting from a consciousness that his constantly increasing debility would render him less and less able to minister to the wants of his family. In even an advanced stage of consumption, well regulated hygienic means were all important, but Dr. C. considered that it was only in the very commencement of the disease that they can be expected to exert an influence tending to the arrest of its development.

Dr. Riofrey, of Paris, who was present by invitation, was requested to give his views on the subject of Consumption.

Dr. Riofrey remarked, that he found the views of the medical men of Philadelphia, in relation to Consumption, more advanced, and more in accordance with what he considered sound practical experience, than those entertained by physicians elsewhere. In Paris there were still many practitioners who regard phthisis as an inflammatory disease, and keep their patients confined to their rooms and on a low diet. Medicines are still in vogue, such as iodine, digitalis, &c., which can produce only a temporary effect upon the symptoms without touching the source of the disease; they cannot improve the nutrition of the body, which is the grand object to be aimed at. In France, Dr. R's. opinions on this disease were considered peculiar, but here he finds them prevalent, and amply confirmed by the experience of the leading members of the profession.

Dr. Riofrey referred to a series of papers on consumption by the late Dr. Joseph Parrish, which were published in the year 1829, '30, in the North American Medical and Surgical Journal. These papers he looked upon as presenting the most correct views in relation to the pathology and treatment of the disease in question.

Dr. Parrish, in these papers, discards the old idea of tubercles being the result of inflammation; he points out the intimate relation between scrofula and consumption, and the importance of favoring external scrofula, rather than dispersing it by local applications, and he shows that the true method of curing consumption, is by adopting measures to improve the nutrition; pure air, exercise, good diet, &c. He was induced to consider all these views as particularly sound. Taking Dr. Parrish's opinions in detail, Dr. R. might find some points upon which he could not agree, but the general tenor of the views, and the practice based upon them are highly instructive and valuable. The influence which these papers has had upon medical opinion in this country, was very evident, from all that Dr. R. had learned, since he had come to this City.

In his investigations into the curability of consumption, a subject which has occupied much of his attention of late years, Dr. R. has found that all the recoveries from the disease have taken place under an invigorating plan, having for its object the improvement of the nutrition. It is upon this principle that the cod liver oil acts. It is an aliment easily assimilated, and gives to the constitution the elements which are wanting. Dr. Riofrey was among the first physicians to employ this article in consumption. He commenced its use in London, in 1835, from having heard of its good effects through Dr. Pearson, of that City, who was using it in chronic rheumatism with great advantage. Its utility in scrofulous complaints, was first inferred, from the fact of the liver of the cod, being extensively employed as a domestic remedy in these affections insome parts of Germany. Mothersthere give it to delicate children, without the advice of the physician, and find that they grow fat under its use. As the liver of the cod contains a large amount of oil, it was inferred that its remedial powers were attributable to it, and hence the oil was extracted and brought into general use.

Dr. R. was fearful that it might attain undue importance, to the exclusion of important hygienic remedies. It is no panacea, but an adjuvant to other means of improving the nutrition. The cases in which he had found it most useful, were those in which external scrofula and tubercles co-existed; but exercise, pure air, good and sufficient diet must be enjoined with it, in order to produce a beneficial effect. A good nutrition must be procured, before the tubercle can be overcome.

Dr. Samuel Jackson, (late of Northumberland,) thought Dr. Riofrey, was right in attributing the present advanced state of medical opinion on the nature and treatment of consumption in this City, especially to the influence of the late Dr. Parrish; his papers upon that subject, produced at the period of their publication a strong impression upon the minds of the profession, and an

evident change in the views entertained of the nature of consumption, and the treatment pursued for its arrest and cure.

Dr. Pepper, believed that the true principle of treating phthisis, was by improving the nutrition, by means of pure air, out-door exercise, nutritious food, social enjoyments, &c. He knew cod liver oil had been useful in some cases, but he doubted whether it possessed any special virtue over other animal oils. A medical friend, in consequence of the frequent sophistication of the article, had substituted for it spermaceti oil, in the treatment of some cases of chronic rheumatism and scrofula, and apparently obtained from the substitute, the same good effects, as from the cod liver oil itself.

Dr. P. did not think that the iodine, in the oil of cod had much to do with its virtues, nor did he suppose with some writers, that the constituents of bile which it contains were especially useful, yet he had certainly seen good effects from its use.

Dr. Emerson, wished to inquire of Dr. Riofrey, as to the prevalence of consumption in Paris; he supposed that the percentage of deaths from this disease in that City must be large, from the immense number of the population who were placed under the most unfavorable hygienic conditions.

He also wished to be informed of the state of opinion in Europe, in regard to the contagiousness of the disease.

Dr. Riofrey replied, that a fair estimate of the number of deaths from consumption in Paris, might be arrived at, from the fact, that nearly one-fourth of the deaths in the population of that City, occur in hospitals. These institutions are free to all, and from the admirable system upon which they are conducted, and the slight prejudice which exists against them, they are very much resorted to, not only by the poor, but by those in better circumstances. It is estimated that 1 in every 4.50 of the population of the Hospitals die of consumption; this cannot be owing to the climate of Paris, for that is pure and temperate; there are other causes existing peculiar to that City; amongst these may be mentioned, the bad construction and crowded state of the houses, the sleeping apartments are very small, they get no air from chimneys, and have no other means of ventilation. This prevails universally among the rich and poor. The effect of alimentation, even when this is good, is impaired by the effects of a confined and impure domestic atmosphere, and all suffer alike from this cause, from the porter to the lady of rank.

In regard to the belief in the contagiousness of consumption, this prevails very generally among the people in the provinces of France, and very generally also in Spain. At Montpellier, he

found it to be firmly believed by the community; but by the more intelligent physicians of Europe, the idea of the contagiousness of consumption was generally repudiated.

Dr. Riofrey remarked at length on the subject of climative influences, in the production of consumption. He believed this branch of science had not been investigated, in a manner calculated to lead to any precise results, and that our knowledge in regard to it, was, as yet, very unsatisfactory. There have been few treatises on the subject of climate, published in America, none he believed excepting that of Dr. Forry, of New York.

In Europe even, but few works have been written on this subject. That of Sir James Clark, is perhaps the most elaborate and authoritative; it is nevertheless full of errors. Many of the assertions in this work have been proved by recent statistical results to be inaccurate.

Dr. Cairy has recently published a work which is more correct; and which contradicts many of the statements made by Sir James Clark. Dr. C. has been investigating the climate of Italy for ten years, and has found that the cities of Italy, in which consumption prevails to the least extent were Venice and Milan.

Dr. Riofrey deprecated the usual practice of sending patients away from their homes, when far advanced in consumption, from a fancied idea of benefit from change of climate. He believed many of them only went away to die.

Dr. Hays considered the chief advantage of sending patients to the South during the winter, was that they might be enabled to enjoy out-door exercise: our Northern climate, is too changeable, cold, and inclement to allow of this, excepting during the summer, and early portion of the autumn.

Dr. Riofrey, believed the opinion which referred the production of tubercles to a defective nutrition, to be correct. He was persuaded that they would be much more prevalent in this country than they are, if the people generally had not the means of obtaining a full supply of good food. It was as an alimentation and not simply, he repeated, as a medicine, that he recommended the oil of cod in consumption; he did not believe it was the small portion of bromine or iodine contained in it, which rendered it useful, but rather its capacity of being rapidly assimilated and of making fat. He had found some patients who could not take this article, they seemed to have a natural antipathy to it, and in others it produced sickness and vomiting. In these cases its employment should not be insisted on. In some children who take it readily, he has found it to have a wonderful effect. After using it a few months, he has known attenuated delicate children, to become fat and robust. It is an excellent alimentation in these cases, and as such alone it should be regarded.

Report on the Pathological Cabinet, By the Curator, Dr. John Neill.

Since the last meeting of the College, a case has been erected on the south side of the Hall, to receive the first contributions to the Pathological Cabinet of the College of Physicians.

Already has there been a valuable collection of specimens presented, one which will be esteemed by the Fellows, not only for its intrinsic value in morbid anatomy, but from its source and history.

The late Dr. Parrish, Vice President of the College, was an industrious collector and conservator of pathological specimens, and the bulk of his cabinet, which served for the purpose of illustrating his lectures, has been presented to the College.

A part of these specimens have been prepared and mounted, and will doubtless be recognised by many of the Fellows as the illustrations of those valuable precepts which so characterized their late distinguished possessor.

No. 1. *Calcareous rod across a Semilunar valve of the Aorta.* Presented by Dr. Isaac Parrish.

This specimen was taken from C. W. M. at. 61, one of three brothers all of whom died of a similar disease. He had suffered dyspnœa and palpitation for three years, but continued actively engaged in his pursuits until within a few months of his death. His digestion was tolerably good; the bowels were regular and the secretion of urine natural. Towards the close of life the difficulty of breathing became very distressing, and even during sleep, the pauses in respiration were so prolonged as to be alarming.

He died suddenly and easily. Upon dissection, the heart was found to be nearly twice its natural size and flabby. No effusion into the pericardium or pleuræ. The valves of both sides were more or less ossified, but across one of the aortic sinuses of Valsalva, was a rod one inch in length, and three lines in thickness. One end rested against the internal surface of the aorta, and the other against the corpusculum Arantii, thus keeping the valve permanently stretched toward the ventricle.

The coronary arteries were also ossified.

Dr. Parrish's remarks. The patient was of a very gouty family; may not this disease which has affected several of its members depend upon the same cause which produces chalky concretions about the joints, whilst in this family, the disposition seems transferred to the heart? Would it not be good practice in another case, to endeavour to invite and fix the irritation in a safer part, in the early stage of the complaint?

No. 2. *Bony Sequestrum.* Presented by Dr. Isaac Parrish.

This is a specimen of necrosis of the humerus, eight inches long, discharged spontaneously, from a child who afterwards recovered with a good limb. The patient was under the care of Dr. Parrish.

No. 3. *Enlarged Prostate.* Presented by Dr. Isaac Parrish.

No. 4. *Enlarged Prostate.* Presented by Dr. Isaac Parrish.

No. 5. *Enlarged Prostate.* Presented by Dr. Isaac Parrish.

Nos. 3, 4, and 5, were all taken from individuals who had suffered for years from that puculiar form of enlargement of the prostate which occurs in old age.

They were used by Dr. Parrish in his surgical lectures, to illustrate.

First. The mechanical obstruction offered by the third lobe of the prostate to the passage of the catheter into the bladder; the uvula vesicæ forming a sort of valve which obstructs the passage of urine and presents a barrier to the introduction of the instrument by the ordinary route. The importance of directing the point of the instrument upwards by the finger in the rectum, or of moving to one side or the other of the opposing third lobe, is here made evident.

Secondly. The specimens show an extraordinary enlargement of the muscular coat of the bladder, and great thickening and toughness of the mucous coat. The strongly developed muscular bands intersecting each other in various directions, are comparable to the musculi pectinati and columnæ carneæ of the heart; and believed by Dr. P. to depend upon the frequent and violent contraction of the organ, which is so characteristic of the disease.

For a more full description of these specimens, and of the disease they so satisfactorily illustrate, see "Parrish's Surgical Observations." pp. 252–5.

No. 6. *Miliary Tubercles.* Presented by Dr. Isaac Parrish.

This specimen was derived from the late High Constable, Garrigues, one of the most robust and athletic men in Philadelphia.

He was unexpectedly attacked when about middle age, with hæmoptysis, which was copious and frequent, attended with fever, and frequent pulse. There was no emaciation, cough, or any other evidence of pulmonary disease preceding the attack. The patient had a remarkably broad chest, fine complexion, and commanding person.

The hæmoptysis continued daily for several weeks, with cough and fever, and was sometimes very copious and exhausting. The patient sank finally, after an illness of about two months, with purulent expectoration, cough, &c. Dr. Morton applied the stethescope at the request of his physician, Dr. P., and discovered a large abscess beneath the right clavicle, with evidence of tubercles in other parts. Post-mortem examination revealed myriads of tubercles, in every stage of development, in both lungs.

The remarkable features of this case, were the fine form, and expanded chest of the patient, the rapid development of and progress of the disease, the copious and persistent hæmoptysis, and the absence of emaciation.

The subject, after death, was loaded with fat; it was an inch in thickness over the thorax.

See Morton's Illustrations of Pulmonary Consumption, pp. 110, 111.

No. 7. *Fracture of the Neck of the Femur.* Presented by Dr. I. Parrish.

No history accompanies this specimen. It exhibits a ligamentous union after a fracture of the neck of the femur within the capsule.

No. 8. *Fracture of the Head of the Femur.* Presented by Dr. I. Parrish.

This specimen is imperfect but interesting, from its having been taken by Dr. Parrish, from the late venerable George Dillwyn, an eminent preacher in the Society of Friends.

The fracture was produced by a fall upon the ice and extended not only through the head of the femur, but also through the acetabulum. There was no eversion of the foot, nor shortening of the limb, but extreme pain on moving the joint. The diagnosis of Dr. P. was fracture of the head of the femur within the acetabulum.

No benefit was derived from treatment, nor could a favorable result be promised. Under these circumstances a celebrated bone-setter from the state of New York was sent for, who pronounced the case one of dislocation, and used considerable force to reduce it. This caused extreme pain and aggravated the patient's sufferings. A short time afterwards the old gentleman was attacked with diarrhœa, which soon terminated his life, about four months after the accident, and in the 82nd year of his age.

No union having take place, the head of the bone was alone obtained, which exhibits a fractured surface in which there had been little or no change.

No. 9. *Nasal Polypus.* Presented by Dr. Isaac Parrish.

Lewis, a black boy, aged about fourteen years, was admitted into the Pennsylvania Hospital in the 7th Mo. 1816. He was

brought from North Carolina, having been affected with a polypus for four years. The tumor almost filled up the pharynx, causing great difficulty of respiration and deglutition.

There was a constant tendency to stupor, and his countenance was expressive of great distress. The parts below the chin were puffed and swollen, and his breathing was so noisy and laborious as to be heard for a considerable distance. So similar was it to the stertorous breathing of the dying, that a maniac who was walking in the yard, and saw the boy in his room, ran to inform the Doctor that he was dying.

The tumor was treated by Dr. Parrish, attending Surgeon, by passing a wire around its base, by means of a double canula introduced through the nostril.

Strangulation of the tumor was thus effected, and the wire left until sloughing should separate the mass.

In the progress of sloughing, extreme distress and increased difficulty of breathing occurred; and, in an attempt to hasten the process, by tightening the wire, it broke at the part where it emerged from one barrel of the canula. The canula was then carefully withdrawn leaving the wire, to the end of which a strong silk ligature was attached, and carried up to supply the place of the wire, which was now removed.

This was secured around the tumor by a firm tie. The tumor was cut by this ligature, so as to fall down lower into the pharynx and to present a still greater obstruction to respiration and swallowing. The danger of the patient was now more imminent than ever, and it was determined to drag out the tumor by a powerful effort. This was done by placing a piece of strong waxed tape around the base of the polypus by means of a double canula, after first dividing the soft palate through at length, and by a strong pull the whole tumour was happily removed. The palate bones were slightly fractured during the operation, but the patient experienced no inconvenience from this source and recovered completely.

Drs. Hartshorne and Dorsey, assisted in this operation.

Dr. Parrish's Remarks.—This case of polypus was a most unusual one, and in its issue truly happy. I felt myself particularly indebted to Dr. Hartshorne, for several important suggestions.

The cutting through the soft palate was indispensable to success, admitting that the tape could have been passed without it. It is possible that the passage of the silver wire and canula had a tendency to lessen the hemorrhage by destroying the blood-vessels supplying the tumour. But considering all the circumstances, especially the increased danger when the centre of the base was passed by the wire, it becomes a serious question whether in a similar case it would not be better to divide the palate, pass the tape, and drag out the polypus in the first instance. I should pursue this practice in another case.

No. 10. *Enlarged Testicle.* Presented by Dr. Isaac Parrish.

No History.

No. 11. *Enlarged Testicle.* Presented By Dr. Isaac Parrish.

No History.

No. 12. *Dislocation at the Elbow.* Presented by Dr. Isaac Parrish.

This specimen is a dislocation of both bones of the forearm backward. The parts had become accommodated in their false positions, and there was some attempt at the formation of a new joint. Bony deposits had taken place in the lateral ligaments.

No. 13. *Enlarged Pelvis of the Kidney and Ureter.* Presented by Dr. Isaac Parrish.

No History. The distention is sufficiently great to hold two fluid ounces.

No. 14. *Enlargement of the Thyroid Gland.* Presented by Dr. Isaac Parrish.

No History.

No. 15. *Biliary Calculi.* Presented by Dr. Isaac Parrish.

No History.

No. 16. *Biliary Calculi.* Presented by Dr. Isaac Parrish.

No History.

No. 17. *Fibrous Tumour.* Presented by Dr. Isaac Parrish.

This tumour is about the size of an egg. No. History.

The above seventeen specimens are all of the " Parrish Collection."

No. 18. *Salivary Calculus from a Horse.* Presented by Dr. J. Neill.

This specimen weighs ; it is composed of the oxalate of lime. It was removed from a living horse.

No. 19. *Cranium with erosion of the Internal Table.* Presented by Dr. J. Neill.

This head was obtained from a boy 16 or 17 years of age.

He came to this city a vagrant, and was arrested in the market-house for stealing. He was sentenced to 30 days confinement, and on being removed from his cell was found to be blind and quite wandering in his mind. On being transferred to the almshouse, his disease was diagnosticated to be a tumor of the brain. The vitreous table of the bones of the cranium is entirely absorbed, exposing the diploe, in which very deep furrows exist, corresponding with the convolutions of the brain. At one point the diploe and external table are also absorbed, so that the pericranium and dura mater were in contact.

No. 20. *Cast of a Fracture of Both Condyles of the Femur.* Presented by Dr. John Neill.

The original of this cast is quite a unique specimen. It exhibits a perfect union after fracture of both condyles.

A full history of the case is published by the Curator in the Journal of Medical Sciences for July, 1849, with a drawing.

The injury was produced by jumping out of the third story window of the Almshouse. None of the usual signs of this fracture were present. There was neither crepitation, nor twisting of the part, nor increased breadth of the knee, nor difficulty in making passive flexion and extension of the leg. The deformity similated that of a partial dislocation of the tibia posteriorly; the leg was thrown backward and the patella was very prominent.

The case was treated by Drs. Benedict and Page; and in six weeks the patient was discharged able to walk with but little deformity and stiffness. One year afterwards he came into the hospital and died of typhus fever. The specimen was sent to the Curator for dissection and preparation. It exhibits an oblique fracture of each condyle perfectly united, with but little shortening, and no increased breadth. The fragments were probably impacted: the structure being cellular and the force of the fall being very great.

No case of the kind is recorded by A. Cooper, Boyer, Hines, Chelius, Velpeau, Smith of Dublin, &c. Dessault refers to one case, and saw two others, and from this experience he says "the signs are easily comprehended." None of the signs which he gives as characteristic of the fracture occurred in this case.

No. 21. *Heart from a Cyanosised Boy.* Presented by Dr. John Neill.

This case had been under the care of Dr. Samuel Tucker, from birth. He attended the mother in her confinement, and he states, that the boy was never entirely free from cyanosis; that his nails were always more or less blue. At times, after great exertion, or extreme emotion he became of a deep blue color, and suffered much from dyspnœa. He was ten years of age when he died. With the exception of the inconveniences of this congenital defect, had enjoyed excellent health. He was of an active habit and irascible disposition.

The post-mortem examination was made by the Curator, with the assistance of Dr. Tucker.

The body was of the usual size of one of his age, the surface was livid, particularly upon the extremities. Upon making the usual incisions it was found that even the small and superficial veins of the integuments were gorged with fluid blood.

The lungs were normal in every respect with the exception of color. The blood-vessels were much congested.

The heart was of the usual size: the pericardium contained the usual quantity of fluid. The coronary veins were very large and full.

The auricular septum was incomplete, the opening would receive the end of the handle of the scalpel. The pulmonary artery was much smaller than usual, and had but two semilunar valves. The aorta arose from both ventricles and was much dilated in its sinus.

The abdominal viscera was healthy. The mucous membranes were dark-colored from congested capillaries.

No. 22. *Finger torn from the Hand.* Presented by Dr. Isaac Parrish.

This finger was torn from the hand of a man who was caught between two rail road cars.

The tendons of the flexor sublimus and flexor profundus, and a portion of the muscle of each, are still attached.

No. 23. *Ulcerated Larynx.* Presented by Dr. Isaac Parrish.

This specimen was derived from a female, aged about 28 years, married, and the mother of two children, and of scrofulous temperament. She had been subject to sore throat for two years, but did not apply for medical advice until about eight months before her death. She was attended by Dr. Reese, and towards the last, by Dr. I. Parrish in Dr. Reese's absence from the city. About May, 1837, she considered herself ill; her voice and respiration becoming affected. In August, her breathing was at times labo-

rious, and her voice shrill and whispering, though with little expectoration. She kept about, however, had a good appetite, and emaciated but little. Her voice and respiration, however, became worse, and finally she could not speak above a whisper, and suffered greatly from the obstruction to respiration. Her health now failed rapidly, hectic fever and night sweats set in, and she died in October, 1837, of suffocation.

Post-mortem. After death, the larynx and trachea were carefully removed; a considerable portion of muco-purulent discharge had collected in the posterior part of the throat. The mucous membrane of the larynx was very much thickened, and thrown into folds, so as to diminish the opening into the trachea very much. The larynx being opened from behind, through the cricoid and arytenoid cartilages, it was found that the mucous membrane of the two sides was so much thickened, as almost to meet, and the depression formed by the membrane, as it is reflected over the vocal ligaments was completely destroyed by ulceration, as seen in the specimen; the cartilaginous rings of the trachea, bony, and completely denuded in some places by ulceration of the mucous membrane. A small piece of bony cartilage under the ulcerated point fell out during the dissection. The whole ulcerated surface was not larger than a ten cent piece. The trachea and bronchia below were healthy, also the lungs. No sight of tubercle was discovered on the most careful examination.

No. 24. *Fracture of the Neck of the Femur.* Presented by Dr. Wilson Moore.

A ligamentous union of the head of the os femoris taken from the body of Elizabeth Lisle, aged about eighty-two years. The accident occurred by a fall on a carpeted floor, by missing her seat on attempting to sit down. Her suffering at the time was great, and on the slightest motion, it was agonizing. On carefully comparing the length of her limbs, no difference could be discovered, neither was any crepitation to be felt, or other evidence of fracture, except in the position of the foot, which was turned downwards and outwards. She was confined to her bed about six months, and gradually improving in strength, her injury became so far repaired, that she was able to sit up in a chair, and by degrees to walk about the floor with the assistance of a crutch and cane.

She survived the injury two years and ten months, and finally died of cachexia, after a confinement of three months.

A microscope has been presented by Dr. B. H. Coates.

John Neill, *Curator.*

Stated Meeting, December 4, 1849.

Dr. Wood, President, in the Chair.

Present, twenty-six members.

Dr. William B. Wilson, was duly admitted a Fellow.

The following works were presented to the Library.

On the Diseases of Infants and Children. By Fleetwood Churchill, M. D. From the Author.

A treatise, in the Hungarian language, On the Disease of the Potato now prevailing in Hungary. By Lewis Tognio, M. D. Published at Pest, 1847. From Dr. Hays.

The Committee on New Hall, presented the following report:

The Committee appointed at the last meeting of the College, to ascertain the probable expense which would be incurred in the purchase of a lot, and the erection thereon of a building suitable for the accommodation of the College, and to suggest a plan, which would enable the College to accomplish this object, beg leave respectfully to report:

They estimate the expense of the purchase of a lot and the erection of a building, at twenty thousand dollars. Although they do not deem it proper or practicable for the College, at this time, to involve itself in such an undertaking, they still believe the plan to be suggested, will, before many years, fully authorize it. They therefore recommend that a fund be raised, by the appropriation on the part of the College, of certain securities they now hold, and by contributions by the Fellows and others; to be vested in trustees, Fellows of the College, who shall hold the fund so raised, in accordance with a deed of trust, separate and apart from the other funds of the College; all such appropriations and donations, and the interest arising therefrom, to be each severally devoted to the purchase of a lot and the erection of a building suitable for the accommodation of the College, but not until the fund thus invested shall amount to the sum of twenty thousand dollars.

Your Committee deem the creation of a trust, of primary importance, as it will effectually secure the ultimate accomplishment of the object the College has in view, and afford a certainty to those contributing, that the fund so raised cannot be appropri-

ated in any other manner. They accordingly offer the following resolutions:

1st. That the College elect three Trustees, (Fellows of the College,) who shall hold, in accordance with a deed of trust, such appropriations as may be made, from time to time, by the College, and such sums of money, or other securities as may be contributed by the Fellows and others. Said Trustees to report annually at the Stated Meeting of the College in January, or oftener if required. And in case of the death or loss of Fellowship, by resignation or otherwise, of a Trustee, another Fellow is to be elected by the College, to fill the place thus made vacant, at a stated meeting, after due notice of said election has been given to all the Fellows then belonging to the College.

2nd. That the College approve the deed of trust herewith submitted, which is as follows:

DEED OF TRUST.

This Indenture, made the day of in the year of our Lord, 1850, Between The College of Physicians of Philadelphia, of the first part, and of the second part. Whereas, the said parties of the first part are desirous of establishing a fund for the purchase of a lot and of erecting thereon a Hall, or other buildings, for the purposes of their Association, and are desirous that the moneys, from time to time, to be contributed for that purpose, shall be held in Trust, free from any other appropriation by the said parties of the first part, or any of the donors of the said fund, and upon the Trusts hereafter set forth.

Now, This Indenture Witnesseth, that the said parties of the first part, for and in consideration of the premises, and for the sum of one dollar to them in hand paid at the time of the execution hereof, by the said parties of the second part, the receipt whereof is hereby acknowledged, Do hereby grant, bargain, and sell, assign, transfer, and set over unto the said parties of the second part, their heirs, executors, administrators, and assigns, $300 of the six per cent. loan of the City of Philadelphia, $300 of the 6 per cent. loan of the District of Spring Garden, and $545 of the loan of the Delaware and Chesapeake Canal Company. To have and to hold the same and all other moneys, property, estate, and effects hereafter to be received for the purposes of this Trust, to the said parties of the second part, their heirs, executors, administrators, and assigns, In Trust Nevertheless, to invest in the joint names of the said Trustees, all moneys so as aforesaid paid to the said parties of the second part, in the loans of the United States, the State of Pennsylvania, and the Incorporated Districts in the County of Philadelphia, in bonds and mortgages, or ground rents, and to receive the interest and income of the said investments and the

rent, interest and income, of all the property and estate hereby granted, or hereafter to be received and held, by the said parties of the second part under this trust, and after the payment of all necessary charges thereon, to invest the said rent, interest, and income, from time to time, as the same becomes due, and is received by the said parties of the second part, their heirs, executors, administrators, and assigns, so that the said rent, interest, and income, with the said principal sum, and the estate, property, and effects, hereby granted, or hereafter to be received, by the said Trustees, for the purposes of their Trust, shall make an accumulating fund. And upon the *further Trust* to change all or any of the investments of the Fund hereby created or hereafter to be received, and of the accumulations thereof, whenever and as often as the said Trustees or their successors in the said Trust may deem it expedient, and to grant, bargain, and sell at public or private sale, any real estate belonging to the said Fund and the accumulation thereof, or hereafter to be conveyed for the purposes of this Trust, and good and sufficient Deeds or other Instruments of writing necessary for said purpose to sign, seal, execute and deliver, the purchaser or purchasers not to be responsible for the application or misapplication of the purchase money or any part thereof. And upon the *further Trust*, so soon as the said accumulating fund shall amount to the sum of $20,000, at the fair valuation of the said Estate and Securities, and not sooner, that the said Trustees, their heirs, executors, administrators, and assigns shall and may grant, bargain, and sell, the said real estate and ground rents, at public or private sale, for the best price that can be obtained for the same, the purchaser or purchasers not to be responsible for the application or misapplication of the purchase money or any part thereof, and shall and may sell and assign the stocks, loans, bonds, and mortgages, and other securities for the best price that can be obtained for the same; And upon the receipt of the proceeds of such sales, shall pay the same unto the said parties of the first part, their successors and assigns, from time to time, upon the order of the said parties of the first part, for the purchasing of a lot, and for erecting thereon a Hall or other Buildings, for transacting the business and for the purposes for which the said parties of the first part were incorporated. And it is hereby understood and agreed, by and between the parties of the first part and their successors, and the parties of the second part, their heirs, executors, administrators, and assigns, that in case of the death, resignation, removal, or loss of Fellowship in the College of Physicians, by either of the said Trustees or their successors in the Trust, by which a vacancy shall occur in the said Trust, the same shall be filled by a Fellow of the said Corporation of the College of Physicians, to be chosen at a regular stated meeting of the said College, by a majority of the votes

of the Fellows present, (provided the same constitute a quorum,) after due notice of the time and place of said elections to all the Fellows of the said College then belonging, so that the said Trust shall only be held and enjoyed by Fellows of the said College; and after such election as aforesaid, the Trustee so elected and appointed, shall be vested with all the duties, powers, and responsibilities of the said Trust, as if originally chosen to fill the same. And the said parties of the second part, each for himself, and not one for the other, his heirs, executors, and administrators, does hereby covenant, promise, and agree, to and with the said parties of the first part, their successors, and assigns, that the stocks, moneys, property, estate, and effects hereinbefore granted, and assigned, transferred and set over to them, for the purposes of this Trust, and all accumulations thereof, shall only be conveyed assigned, transferred, and set over to any person or persons, by the joint act of the said Trustees, and in case of a vacancy in the said Trust, shall not be conveyed, transferred or set over, until the vacancy is filled as aforesaid, or by the action of a court having jurisdiction therein, and also, that they the said Trustees, shall and will well and truly keep and perform all and singular, the duties, trusts, and agreements, hereinbefore set forth, and shall and will, at the proper costs and charges of the said parties of the first part, and their successors, execute all deeds, receipts, releases, assignments, or other instruments of writing, under seal or otherwise, necessary and proper, for carrying the Trusts and agreements of this instrument into full force and effect, according to the intention of the parties hereto.

In Witness whereof, &c., &c.

3rd. That the President and Secretary be directed to execute the deed of trust, as above recited, and affix thereunto the corporate seal of the College.

4th. That the Treasurer of the College be directed to transfer $300 of the 6 per cent. loan of the City of Philadelphia, $300 of the 6 per cent. loan of the District of Spring Garden, and $545 of the 6 per cent. loan of the Chesapeake and Delaware Canal Co., which the College now hold, to the Trustees who may be elected.

5th. That a Committee be appointed to invite and receive contributions from the Fellows, for the purpose of raising a fund for the purchase of a lot and the erection of a building, and that all donations so received, shall be handed over to the Treasurer and by him to the Trustees.

George Fox,
Geo. B. Wood,
Ch. D. Meigs,
Isaac Hays,
Jno. Rodman Paul,
} *Committee.*

On motion of Dr. Bell, the consideration of the foregoing report, and the resolutions thereunto attached, was postponed until the stated meeting in January.

Dr. Jackson, (Professor,) on behalf of the Committee appointed to examine into the condition of the mucous membrane, of the intestinal canal, in persons dying of Cholera, made the following

REPORT.

Science is positive only when its facts are positive. A subject, the phenomena of which are numerous and complex, can be understood only when each of its phenomena or facts have been analyzed, and positively ascertained.

In Epidemic Cholera, the most prominent and constant phenomena, are purging and vomiting: and in ninety or more, of one hundred cases, these phenomena appear to induce the condition, that usually terminates fatally.

It is, therefore, an important object in determining the phenomena of Cholera, to ascertain whether any, and if any, what constant anatomical alterations can be detected in the intestinal canal of cholera patients who have succumbed under the disease.

The College with the view to obtain, as far as possible, accurate information, on this single question, appointed the undersigned, at the meeting held on the 19th day of June last, a committee to investigate this subject.

The Committee having attended to this duty, submit the following report:

The ordinary autoptical examinations, heretofore practised, have failed to yield any satisfactory information, and are nearly useless for the purposes of science.

Extensive structural lesions may exist, that cannot be seen, or very imperfectly discerned by the unaided sight, and without proper preparation.

It was determined by the Committee that the intestines, before being submitted to examination, should be finely injected, and subsequently inspected with the microscope.

This task was undertaken for the committee, by Dr. John Neill, demonstrator of Anatomy in the University of Pennsylvania. The admirable manner in which he has performed this duty, can be judged of by the beautiful preparations now on the table, which he has presented to the College for its museum.

The injections are made with turpentine colored with vermillion. It was found by Doctor Neill, that when he employed size, it did not penetrate well, and numbers of capillaries were not filled; the same result occurred when Canada Balsam was used. It led, at first, to the supposition that the capillaries were destroyed by the

disease. The method last adopted, as the fine preparations on the table demonstrate, show the perfect integrity of the capillaries.

A healthy intestine, taken from a subject who had died of pleurisy, was first injected as a standard of comparison. Specimen No. 8, exhibits the healthy mucous membrane injected, deprived of its epithelium: No. 9, presents the same, with the epithelium undisturbed.

The committee confining themselves strictly to the single object for which they were appointed, report the following facts as the result of their investigation. The preparations and drawings on the table will enable the Fellows to determine on the accuracy of the statement.

1st. In the recent subject, the peritoneal coat, like all the serous membranes, was in all, remarkably dry. The lubricating serosity is deficient in the serous membranes.

2nd. The epithelial layer of the intestinal mucous membrane, was in all the specimens, either entirely removed, or was detached, adhering loosely as a pulpy layer, mixed with mucus, or an albuminoid substance.

The first, or the denuded membrane, is exhibited in specimens Nos. 1, and 2.

The second, or the adhering pulpy layer of epithelium and mucus, is seen in specimens 3 and 4. In these the layer is hardened by chloride of zinc.

The true epithelial character of this layer is also shown in the microscopic specimen, No. 1, and in the drawing, Fig. 6, by Mr. Stout, Artist, and a duplicate by Doctor Neill.

3rd. *Peyerian Glands.* Peyer's Glands, were developed to a greater or less extent in all the cases examined. Specimens Nos. 5 and 6, and drawing, Fig. 1, exhibit this state of the glands. In specimen No. 6, the gland is 9 inches in length.

Specimen No. 7, presents a gland of Peyer, injected and dried, and drawing, Fig. 2, represents an injected gland.

4th. *Solitary Glands.* These were also developed, and contained, in the recent subject, a minute quantity of white substance. They are seen in specimen, No. 10, and are represented in drawing, Fig. 3. These enlarged solitary glands have the appearances designated by Serres, and Nonat, as Psorenteric.

The villi covering the glands of Peyer, and the solitary glands, present the same appearances as in other parts of the same intestine, exhibited in No. 11.

5th. *Villi.* They are denuded of the epithelial covering, but are unchanged in other respects. The drawing Fig 7, (*a*) represents this state of the villi; and it is beautifully demonstrated in the microscopic specimen, No. 2.

The internal structure of a villus is shown in drawing, Fig. 7. (*b.*)

6th. *Capillary Vessels.* These are entire and manifest no departure from their normal state. The appearances of the capillaries of a cholera intestine, are identical with those of the healthy mucous membrane when the epithelium has been removed. In the natural state, the epithelium, from its thickness, conceals the injected capillaries.

The microscopic specimens, Nos. 3 and 4, show the capillaries of the cholera intestine injected.

Drawing, Fig. 5, represents the healthy intestine injected and the epithelium removed.

Specimen, No. 9, is a healthy intestine injected, the epithelium undisturbed. Drawing, Fig. 4, represents the capillaries of the cholera intestine.

In no instance was a vesicular eruption observed. In some of the dry (No. 12,) specimens, there is an appearance that might be mistaken for it, but it is an emphysematous state, resulting from commencing putrefaction.

The foregoing facts are derived from the examination of twenty-five subjects.

They are illustrated by the preparations and drawings on the table. These consist of eleven mounted, wet, and twelve dry preparations, four fitted for the microscope, and seven drawings.

Samuel Jackson, M. D.
John Neill, M. D.
Henry H. Smith, M. D.
William Pepper, M. D.

EXPLANATIONS OF THE ILLUSTRATIONS

DRAWN FROM

DR. NEILL'S PREPARATIONS.

FIGURE 1. Peyerian Gland, from the ileum; natural size.

FIGURE 2. Peyerian Gland, injected; natural size.

FIGURE 3. Solitary Glands, Psorenterie; natural size.

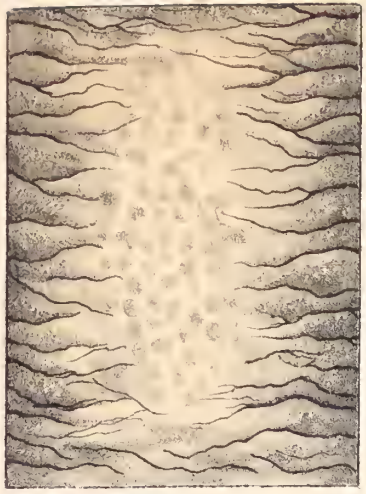
FIGURE 4. Follicles of Lieberkuhn, and villi, with their capillaries injected; magnified seventy diameters.

FIGURE 5. Villi, and their capillaries, from a patient who died of pleurisy; magnified seventy diameters.

FIGURE 6. (*a.*) Villus, from a Cholera patient, deprived of epithelium; three hundred diameters.

(*b.*) Villus, showing structure: three hundred diameters.

FIGURE 7. The pulpy layer of epithelium and mucus: treated with acetic acid; three hundred diameters.



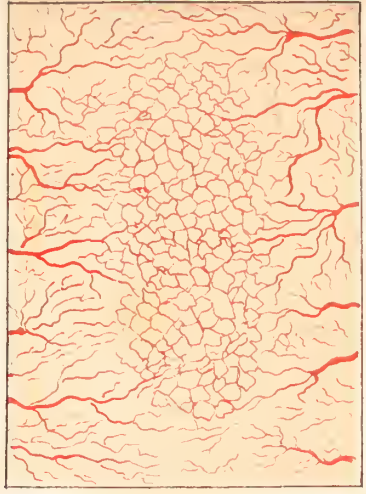


Fig. 4.

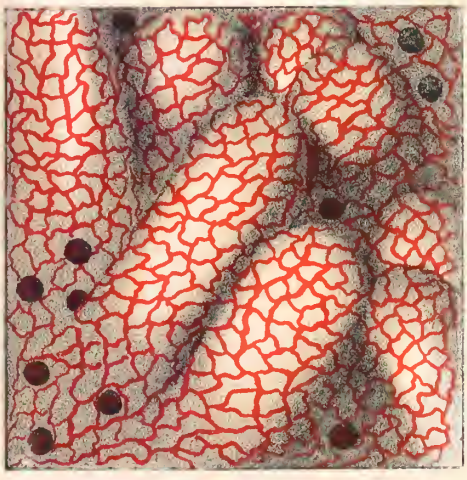


Fig. 5.

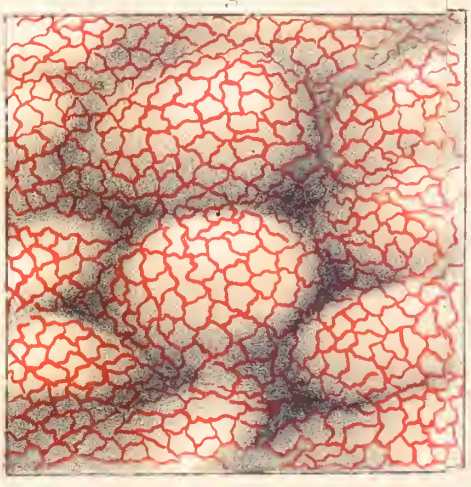
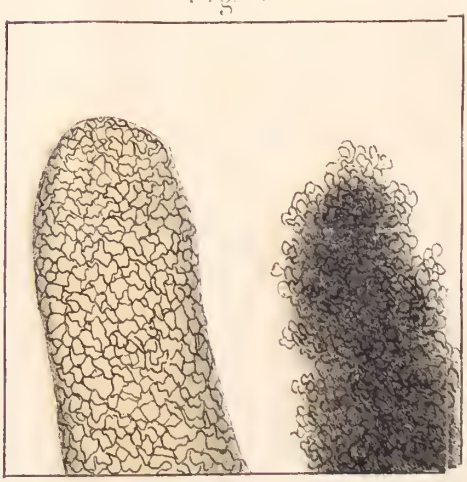


Fig. 6.

Fig. 7



Drawn from Doct. Neills Preparations by F. Stout.

Dr. Parrish inquired whether the committee considered the alterations of structure referred to in their report, as *characteristic of cholera*, and *peculiar* to that disease?

Dr. Jackson replied, that upon that subject the committee expressed no opinion; they had merely presented the results of their examinations, leaving each one to make for himself the application of them in the investigation of the pathology of cholera.

Dr. Pepper (a member of the committee) called the attention of the College to a report on the Pathological Anatomy of Cholera, made to the Medico-Chirurgical Society of *Edinburgh*, by Dr. Gairdner, an abstract of which is contained in the last number of the American Journal of the Medical Sciences. In that report the same morbid appearances in the mucous membrane of the alimentary canal as are noticed by the committee of this College, are pointed out. The desquamation of the epithelium is particularly referred to, but this is considered by Dr. Gairdner not as a special pathological condition, but as the result of a purely mechanical maceration, occurring after death. To prove this, Dr. G. subjected the fluids found in the intestines after death, to microscopic examinations, and discovered in them portions of perfect epithelium, looking as though they were pealed off from the mucous membrane, and preserving the form of the villi and follicles to which they had been attached. Dr. G. also affirms that the true cholera stools passed during life, contain so little perfect epithelium, as to be of no importance. He also states that artificial maceration will produce desquamation of the epithelium in the healthy mucous membrane.

Dr. Pepper considered the source from which these observations emanated, as entitling them to serious attention, and had he known of the paper of Dr. Gairdner before signing the report presented this evening, he should have urged upon the committee, the introduction into it of a qualifying clause upon this point.

Dr. Jackson was surprised at the statements just made. He had not seen the paper of Dr. Gairdner, but should feel inclined to distrust the accuracy of that gentleman in regard to the causes of abrasion of the epithelium of the intestinal mucous membrane observed in the post-mortem examination of cholera subjects. He did not believe that the maceration of the healthy mucous membrane would produce the peculiar appearances that are observed after death from cholera, or that these are a mere result of post-mortem changes. Dr. Jackson was, however, disposed to test the correctness of these statements by future comparative observations, and hoped that a committee would be ap-

pointed by the College to prosecute investigations directed to the settlement of this question. Healthy mucous membrane should be subjected to maceration, and the intestines of patients dying of other diseases than cholera, should be submitted to the same methods of examination as those pursued by the committee who have just reported. By this means only could the truth be arrived at.

Dr. John Neill (a member of the committee) was convinced that the peculiar and extensive destruction of the epithelium of the mucous membrane in cholera was not merely the result of maceration occurring after death, or else it would be much more frequently noticed in the course of post-mortem examinations. In examining the bowels of persons dying of ordinary diseases, it was rarely the case that we could see with the naked eye, the villi of the intestinal mucous membrane, whereas in cholera patients the anatomical arrangement of these parts was distinctly visible, more so than he had ever observed it in ordinary dissections. This fact proves to his mind that the abrasion of epithelium to an extraordinary extent, takes place in persons dying of cholera, and is in such cases a true pathological lesion. Still Doctor Neill expressed his willingness and desire to pursue the investigation, in order to determine whether this abrasion was a more common occurrence than had been supposed. He invited from the Fellows, specimens of portions of bowel taken from subjects who have died of other diseases than cholera, in order that a fair comparison might be instituted by the committee.

Dr. Bell was not surprised that there should be extensive desquamation of the epithelium of the intestinal mucous membrane in cholera, though he attached less importance to it as a pathological characteristic of that disease, than some of the other speakers. It is well known that the throwing off, and reformation of the epithelium of the mucous membrane is constantly going on in a state of health, as a necessary physiological process, and it is altogether reasonable to suppose that where any extraordinary irritation of the intestinal mucous membrane exists, this process would be rendered more active. Dr. B. had no doubt that in ordinary cholera morbus, dysentery, and other diseases of the alimentary canal, the same desquamation of the epithelium occurred, and hence he was not disposed to consider it as the characteristic of cholera maligna.

Dr. Jackson felt convinced that the conclusions at which Dr. Gairdner appears to have arrived, will not be borne out by a series of comparative observations upon the condition of the intestinal mucous membrane of patients dying of cholera, and those

who have fallen victims to other diseases. He could not imagine any analogy between the appearances detected by the committee of the College, and the changes produced in the mucous membrane by simple maceration: and while he cannot conceive of so complete a denudation of the intestinal mucous membrane of its epithelium, as is seen in the post-mortem examination of cholera subjects, being produced by mere maceration, especially when we consider the rapidity with which death occurs, the almost immediate discharge by vomiting and purging, in the great majority of cases, of the fluids poured into the intestinal canal during the life-time of the patient, and the unfrequency with which any amount of fluid matters is detected in the bowels after death; still he believed it to be proper that the same or a new committee should pursue the same investigations that have been made, and which have shown that a loss of the epithelium of the mucous membrane of the intestines, with enlargement of its glands is invariably present in those who fall victims to cholera, in cases of death from other diseases. It is asserted by a respectable authority, that the same things occur in other affections, and Dr. P. believed it to be the duty of the College to pursue the investigation so that the accuracy of this statement may be tested, and not until then can we be certain that the appearances described by the Committee are peculiar to cholera, or common to a number of diseases: whether they are really pathological lesions, or mere physical effects. The investigation is one demanding much labour, but still it appeared to him necessary to give value to the work which the committee have already performed. The members of the profession must lend their aid in the fulfilment of the task by furnishing the committee with the proper materials, accompanied with a history of the cases from which these were derived.

Dr. H. H. Smith was not favourable to continuing the committee to investigate the condition of the mucous membranes in other diseases. He thought that their investigations had satisfactorily established the facts set forth in their report, and that there their labours should cease.

Dr. Parrish did not agree with the last speaker. To have any practical value, the observations reported by the committee must be viewed in connection with other facts; and it must be shown that the pathological appearances pointed out by them, are peculiar to, and distinctive of, this form of disease. We had been told by Dr. Pepper that a series of observations upon the same subject, extended over a wider field, had presented the question in a new light. It would seem proper, therefore, that the committee should be continued, to examine more fully into the condition of the mucous membrane in reference to other diseases. It must be

remembered that the *mode* of examination pursued by the committee in these investigations is new, and unusually thorough. Let the same structures be subjected to an equally rigid analysis, without reference to the disease of which the individual died, and we may have results altogether different from what we anticipate. Dr. P. alluded to the danger of constructing theories of disease, and basing modes of practice upon them, from a partial view of the changes discovered in the body after death. It is but a few years ago, that the medical world was agitated by certain theories of fever based upon supposed alterations in the mucous membrane of the stomach and bowels. The doctrine of "gastro-enterite" exercised great sway over the minds of many prominent physicians and teachers, and was for a time thought to be well established. But by instituting a series of examinations into the appearances of the same parts in other diseases, and even in healthy individuals, the fallacy of this doctrine was exposed, and it was even found that the red spots, and other appearances confidently believed by some to indicate inflammation, were found in the membranes of animals bled to death, and were the result of mere post-mortem changes. Let us not be led into a similar error in this case. Dr. P. was therefore in favor of continuing the committee to extend their inquiries in the manner proposed, and from the ability and frankness displayed by them thus far, the College have reason to look for a fair exposition of the whole subject at their hands.

On motion of Dr. Jackson, the Committee on the Condition of the Intestinal Mucous Membrane in Cholera was continued, with the request that they would make a comparative series of examinations into the condition of the same membrane in other diseases than cholera.

A Proposition (8) for Associateship was presented.

Report on the Pathological Cabinet. By John Neill, M. D. Curator.

Since the last report the following preparations have been presented:

No. 25. *Wax Cast of a Malignant Ulcer.* Presented by Dr. Isaac Parrish.

Wax cast, colored from nature, of a malignant ulcer of the back of the hand, involving the ring and little finger, and extending back towards the wrist joint. The patient was an old gentleman from New Jersey, about seventy-five years of age, who came to

Philadelphia, in 1836 for advice, and consulted Drs. Parrish and Physick. The ulcer had commenced as a small, warty excrescence, and gradually assumed its present aspect. It was deemed most prudent to remove the disease, by partial amputation of the hand, retaining the two fore fingers. This was done, and the cast taken and colored immediately after the operation. It was found that the tumor was malignant, but as there was no affection of the absorbents or of the glands in the vicinity, it was thought that the constitution might be safe. The wound healed kindly and rapidly throughout its whole extent, and what was remarkable, no vessels sprang, and no ligatures were applied. About a month after the operation, a small, hard, immoveable tumour was perceived just above the bend of the arm; this increased rapidly in size, and at the end of three months was as large as a pigeon's egg; it ulcerated and assumed a malignant aspect. The whole arm became bloated and swollen, and the patient sank from constitutional irritation.

No. 26. *Wax cast. Melanosis of the toe.* Presented by Dr. Isaac Parrish.

Rachel Yorke, aged 43, of dark complexion and slender frame, was admitted into Wills' Hospital by Dr. Parrish, in January, 1837, for a fungous tumour on the ball of the great toe. The tumour was half the size of a pigeon's egg, of a soft and fleshy texture, with a red and ulcerated surface. It originated in a small mulberry-like mole, supposed to have been congenital, and attended with no pain or discharge. Near the toe-nail was a black tubercle about the size of a shilling. Her health had not suffered until about this time, when the tumour became painful and inflamed, and an abcess formed in the groin. She continued to grow worse, hectic fever set in, and she died on the 21st of March, at her own house.

Post-mortem. The tumour on the toe was slightly increased in size: the knee joint was much swollen and distended with fluid; the glands of the groin were enlarged and softened. The tumour was not cut, in order to make the cast in wax.

Both lungs were studded with melanotic masses, the right was hepatized.

The peritoneum had numerous melanotic bodies attached by pedicles and varying in size from a pin's head to that of a cherry; they contained a black fluid. The liver, spleen, kidneys, and heart presented no unusual appearance.

The glands of the groin contained a melanotic deposit and so did a neighboring abscess.

(Condensed from the American Journal of Medical Sciences, May, 1837.)

No. 27. *Renal Calculi.* Presented by Dr. John Neill.

These were taken from a little girl, 12 years of age, who had suffered much from incontinence of urine. Her general health was but little impaired, although she was somewhat emaciated. She had several attacks of severe pain, one of which immediately preceded her death. On the day previous to this attack, she was running about as usual. She was much prostrated by it, and sank rapidly. On Tuesday the 28th of April, I made the post-mortem.

There was no organic disease, except in connection with the kidneys. These organs were six inches in length, three in breadth, and two inches in thickness. The color was very dark, and the natural consistence destroyed. Upon opening them, I found the pelves, calices, and infundibula greatly distended, and containing a large quantity of matter, partly albuminous, and partly puriform.

The parietes were so thin, and the structure so altered, that none of the characteristic appearances of the gland could be observed. The left ureter was much enlarged. The bladder presented no mark of disease. These aborescent calculi, with all their stems, branches, and buds, present the appearance represented in the accompanying drawings. The buds are perfectly white, and composed of a number of beautiful shining crystals. Some of the stems are of a brownish tinge, others appear corroded as if

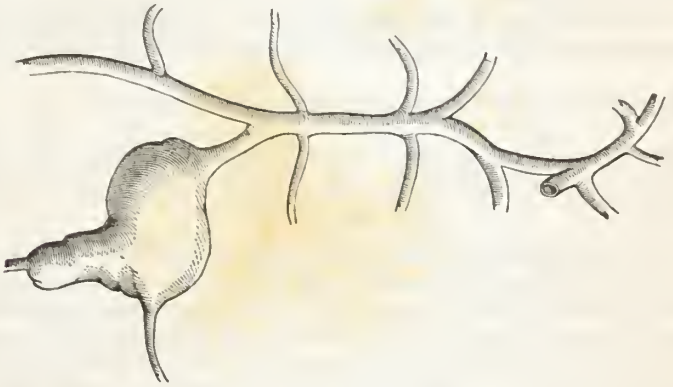
an acid had been applied. Their weight is 510 grains. Chemically, they consist of the phosphate of lime.

(Condensed from the American Journal of Medical Sciences, July, 1849.)

No. 28. *Aneurism of Vertebral Artery.* Presented by Dr. Neill.

This specimen was presented to me some years since, by one of the house physicians of the Alms-House. It was taken from a man who had suffered with some affection of the nervous system, I think epilepsy.

It occurs in the right vertebral artery, half an inch from its junction with its fellow, to form the basilar. Its shape is ovoidal, as is represented in the accompanying drawing, which is of the



natural size. The parietes of the sac were thickened by calcareous deposit in the middle coat of the artery.

(American Journal of Medical Sciences, July, 1849.)

No. 29. *Caries of Hyoid Bone.* Presented by Dr. F. G. Smith.

No History.

No. 30. *Partial Ossification of the Larynx and Trachea.* Presented by Dr. F. G. Smith.

No History.

No. 31. *Complete Ossification of the Thyroid and Cricoid Cartilages.* Presented by Dr. F. G. Smith.

No History.

John Neill, *Curator.*

Stated Meeting, January 1, 1850.

Dr. Meigs, Vice President, in the chair.

Present, fifteen members.

Dr. Hays presented to the Library, the following works:

Dr. Joseph Carl, Ed. Hoser's Rückblicke auf sein Leben und Wirken. Nach dessen Tode herausgegeben von Dr. Wilhelm Rodolph Weibenweber. Prag. 1848.

Brunnenarztliche Mittheilungen über die Wahl der Jahrzeit beim Gebrauch der Karlsbader mineralquellen. Von Dr. L. Fleckles. Leipzig, 1848.

Ueber die äusseren Standes-vehaltnisse der Militair-Aerzte insbesondere in Bayern. Von Dr. F. Sommer. Erlangen, 1848.

A proposition (9) for Associateship was presented.

On motion of Dr. Condie, it was *Resolved,* That when the College adjourns, it adjourn to meet on Tuesday evening, the 15th instant.

Dr. C. D. Meigs remarked, that having on a late occasion communicated to the College certain opinions he had formed on the possible development of tubercular disease from fragmented coagula formed in the heart, he was now desirous to read a passage from Gerber's General Anatomy, p. 302, in which Mr. G. expresses the opinion that portions of concrescible matter driven by the circulation into the tissues, must result in the formation of tubercle. He was not aware at the time he made his communication, that Mr. Gerber entertained opinions confirmatory of the views he had adopted upon the destination and *pathological* influences of coagula in the circulation.

"§ 310. Various and very dissimilar causes may bring about coagulation of the concrescible fluids of the body, the chyle, the lymph, the blood, and some of the products of glandular secretion. Among the number of these causes may be reckoned loss of the solvent medium, particularly the water; greatly retarded motion, or absolute stasis; the admixture of chemical re-agents, absorbed along with the chyle, the lymph &c., such as acids, salts, pus, mucus, ichor, &c., or that penetrate from neighbouring parts in virtue of the law of endosmose. To these must be added mechanical causes, injuries of all kinds, pressure, bruising, solution of contumity; and farther, the influence of unusual temperature, exposure to excessive heat, severe cold, &c.

"§ 311. Should the diameter of the particles of coagulum, how-

ever produced, be greater than that of the capillary vessels of the lymphatic, sanguiferous, and secreting system, they will become impacted in the capillary rete and stop this up; or otherwise, should the capillary vessels be injured in any way, should they become compressed by extravasation around them, for example, then may the pure blood itself suffer obstruction. In this way, a local stasis is produced in the blood-vessels betwixt the part implicated, and that at which the circulation is carried on by collateral branches and anastomoses in the lymphatics and lacteals betwixt the glands and the periphery connected with them. It is easy to see, therefore, why the lymphatic glands, the lungs, and the liver, are so commonly the seat of tubercular depositions! The coagula first reach the capillary vessels of one or other of these organs, and there get set fast as a matter of course. The fluid that has passed unimpeded through the pulmonic circulation in particular, will not be apt to encounter any impediment in the course of the circulation, unless perchance it be in some injured part."

Adjourned Meeting, January 15th, 1850.

Dr. Wood, President, in the chair.

Present, thirty-two members.

The following works were presented to the Library:

Transactions of the American Medical Association, Vol. 2, 1849, from the Association.

Darstellung der Verfassung und Erichtung der Baumwoll-Spinnerei-Fabriken in Nieder Oesterreich, Von Dr. Jos. Joh. Knolz. Wein, 1843.

Technick der Medicinischen Diagnostik, Von Dr. A. Siebert. Erlangen, 1843.

Die Homöpathie, physiologisch, pathologisch, und therapeutisch begrundet. Von Aug. W. Koch. Karlsruhe, 1844.

Ueber den Zustand der Heilkunde. und über die Volkskrankheiten in der Europäischen und Asiatischen Turkei. Von Dr. F. W. Oppenheim. Hamburg, 1833.

Untersuchungen über periodische vorgänge in Gesunden und Kranken Organismus des Menschen. Von Dr. Georg Schweig. Karlsruhe, 1843.

Ueber Verdünnung und Verdünner. Eine höfliche erwiederung des Dr. Eisenmann auf das höfliche sendschreiben des Herrn Regimentsarzts Dr. Griesselich. Herausgegeben und bevorwortet von Dr. A. Kornfegen. Hamburg, 1838.

Verschlag zur heilung der Lungenschwindsucht. Von Dr. Wolfgang Hamburger, 1843.

Beitrage zur Wissenschaftlichen Heilkunde Von Dr. C. A. W. Richter. Leipzig, 1844.

Dr. B. R. Wellford of Fredericksburg, Virginia, was duly elected an associate.

The resolutions appended to the Report of the Committee on erection of Hall were taken up and adopted.

The following were appointed the Committee under the fifth Resolution: Drs. Fox, Condie, M. Stille, West, Norris.

The College proceeded to ballot for Trustees in accordance with the first resolution, when the following Fellows were duly elected:

George B. Wood.
George Fox,
J. Rodman Paul.

On motion of Dr. Paul the Committee on erection of Hall were continued, with instructions to have the necessary papers prepared, and to take all other steps that may be necessary for carrying into effect the resolutions just adopted.

The following Fellows were duly elected Delegates to represent the College in the Convention for revising the United States Pharmacopœia.

Joseph Carson,
Henry Bond,
Francis West.

The following Fellows were duly elected Delegates to represent the College at the next Session of the American Medical Association.

Caspar Morris,	Charles Evans,
Rene La Roche,	Benjamin H. Coates,
Charles D. Meigs,	W. Byrd Page,
William H. Klapp,	Francis G. Smith,
W. S. W. Ruschenberger,	Lewis Rodman,
J. Rodman Paul,	Saml. L. Hollingsworth.

On motion of Dr. Carson, power was given to each of the above Delegations to fill any vacancies that may occur in their respective bodies.

A Proposition (10) was presented for Fellowship.

The following proposition to amend the Ordinances of the College was laid upon the table:

Chapter I. To add to Sect. 7: He shall act as Librarian.

Chapter II. To follow Sect. 8: Any Fellow who shall remove from the City of Philadelphia and Incorporated Districts, shall not, in consequence of such removal, forfeit his Fellowship, but shall be exonerated from the payment of the annual contribution.

SUMMARY

OF THE

TRANSACTIONS OF THE

COLLEGE OF PHYSICIANS

OF PHILADELPHIA.

FROM FEBRUARY 5, TO JULY 2, 1850, INCLUSIVE.

Stated Meeting, February 5th, 1850.

Dr. WOOD, President, in the chair.

Present twenty-eight members.

N. D. BENEDICT, M. D. was duly elected an Associate.

The work of the Baron Dupuytren, entitled Operation de la pierre d'apres une method nouvelle; in Folio, was presented to the Library by WILLIAM HEMBEL, Esq.

On motion of Dr. WEST, it was Resolved, that the Secretary be requested to return the thanks of the College to Mr. Hembel for his valuable donation.

The Library Committee reported the receipt of the following works from the Sydenham Society of London:
The Works of Hippocrates, Vol. II.
Rhazes, on the Small-Pox and Measles.
Rokitansky's Pathological Anatomy, Vol. II.

The Publishing Committee reported that they had issued the first Number, Vol. III. of the Summary of Transactions, and had printed the extra copies of the Biographical Notice of Dr. Thomas T. Hewson, directed by a resolution of the College.

The Committee on New Hall, reported that they had completed their duties, and presented the deed of trust, duly executed, when, on motion, the Committee were discharged.

The Committee on subscriptions to Trust Fund, reported progress and were continued.

The amendments to Ordinances proposed at the last meeting were taken up and passed.

Propositions (11–12) for Fellowship were presented.

A communication was received from the Secretary of the American Philosophical Society, acknowledging the receipt of No. VIII, Vol. 2, of the Summary of Transactions.

Dr. Neill Curator reported additions to the Pathological Cabinet.

Dr. Griscom stated that he had recently been called to a girl of seven years of age, who had been attacked with the usual initiatory symptoms of scarlatina; these were succeeded, on the second day, by a slight bright red efflorescence upon the surface of the body. The child was convalescent by about the seventh day, and Dr. G. discontinued his attendance on the ninth day. Three days subsequently, he was again sent for to see the patient, when he found her covered with an eruption of genuine measles. She was entirely well upon the fourth day. Dr. G. has since seen four other cases of a similar character. All these children were seized, in the first instance, with strong rigors, cerebral disturbance, and fever, followed by a bright scarlet efflorescence upon the skin, redness of the tongue, with protrusion of its papillæ. There was some cough, and in two of the cases, inflammation of the mucous membrane of the fauces. Immediately upon, or within a very short time after the subsidence of the symptoms, all the children were attacked with measles. The diagnostic symptoms of this latter affection were well marked. The disease was, however, mild in its character, and in all the cases terminated favourably.

Both scarlatina and measles are prevailing at the present time. Are we to conclude that in the cases alluded to, the poison of both diseases had been received into the systems of the patients and had produced, in succession, their specific effects?

Dr. Gibbons remarked that he had recently seen one or two cases somewhat similar to those related by Dr. Griscom. He had, also, met with some cases of mental disease, the outlines of which he would present, which if they did not convey any very important instruction to the Fellows, would no doubt interest them.

The first case was that of a Lady, who called at his office. She complained chiefly of an involuntary aversion to her husband, with which she had become possessed; said that she experienced an uneasy sensation in her head, and an uncommon, indescribable sensation whenever her husband entered the house, on whose part there was however, no lack of affection. She admitted that she had the same feelings in reference, also, to her intimate friends. She stated likewise, that she could not raise her eyes from the floor when speaking to strangers. Being the Physician to her family, she had come to consult Dr. G. to see whether he could not do something to relieve her from her present unhappy feelings. She was aware of no moral cause to which their origin could be attributed. As the patient complained of pain in the back of the head, Dr. G. suspected disease of some portion of the brain, and accordingly directed the application of cups, from which she experienced some relief; leeches were subsequently directed, and various other remedies were tried. The pulse and appetite became good, though the tongue continued somewhat foul. For some months she continued to complain of the disagreeable and uncontrollable feelings she experienced when in company with her husband. If she could only force herself to look up and talk freely with him, she always felt better. She has been gradually improving under the use of nitrate of silver, one grain three times a-day, in combination with extract of gentian. This produced a slight increase of the peristaltic motion of the bowels, and an improvement in the tone of the stomach. Repeated blisters to the back of the head were also directed. At the same time she was induced to wean the infant she was nursing, and to remove from her own home, to the house of a relative, in order to avoid her husband's company, in which she is always worse. There was nothing remarkable in the appearance or quantity of the urine passed by this patient.

The second case was that of a mulatto man who had formerly resided in Baltimore. The patient complained that he was bewitched. That he could not attend to his business. An old woman, he said, stood at the window opposite to his place of business, and by her sorcery moved him backwards and forwards at her will. This woman was pregnant, he said, and caused him to feel all the pains incident to her situation; these be experienced especially when he was in the cold. He further stated that he had been a Catholic; that in Baltimore some Protestants had proposed to present him with a Bible; that when he went to receive it, there were a number of Catholics present, who, when the Bible was handed to him, got up and blew with their mouths, and that ever since he has been subject to the persecution of all the religious persons of the city. Dr. G. went to this man's boarding-house, and made some inquiries in relation to him. The keeper and inmates of the house gave him a good character; they had never remarked

any thing peculiar about him. Dr. G. mentioned the state of his mind. The keeper of the house was utterly amazed; he said that he sat down every day to table with the other boarders, none of whom had ever detected any traces of insanity in him. Dr. G. proposed to take the spell off of him by mesmerism; but the patient said that this could not be done, since it was by mesmerism that all his troubles had been produced.

The third case was that of a man who stated that, about a year previously, he had slept at a hotel, in the same bed with another individual. That immediately afterwards he experienced an intolerable itching about the pubes, and, on examination, found that he was covered with vermin. That, subsequently, they got into his system, and finally into his head. He complained of the utmost annoyance from this imaginary infection of his whole system with vermin. He said he had tried many remedies to rid himself of them but without avail. He was accustomed to cover his head with cotton, and when this became warm he took it off and put it in the fire. From this he assured Dr. G. he always derived relief.

In another case which occurred in the wife of a Physician, a lady of intelligence and piety, there was an entire loss of affection for her children. She was very proud of them, and had previously exhibited towards them the most ardent love. She deplored her loss of the natural affection for her offspring, but said that she could not control her feelings. I have absolutely, she declared, no more affection for my children, than for any of those I meet in the public streets. The perversion of feeling in this case was connected with gastric disease and passed off when this was relieved.

Dr. Green referred to the presumed connection between the diseased condition of the reproductive organs in the male and female, and disturbance in the functions of the cerebellum; he inquired of Dr. Gibbons whether in the first case related by him, there was any indication of disease of the uterus or ovaries.

Dr. Gibbons replied that there was not the slightest evidence of either organic or functional derangement of those organs.

Dr. Evans remarked that the primary disease may exist in any of the organs. That cases in which the perversion of the moral feelings is exhibited in an aversion to near relatives, are more particularly connected with disease of the mucous membrane of the stomach. He has seen many cases of insanity in colored persons, all of whom believed themselves bewitched, or that they were laboring under some occult influence.

Dr. Bell called attention to the curious fact of the Negro races being peculiarly prone to a belief in conjuration. In their own

country as well as here, they are firmly convinced of the influence of the conjuror's spell in the production and cure of disease, as well as in securing success to their undertakings or in causing these to fail.

Dr. Condie, did not believe that this faith in conjuration was peculiar to the negro. It appeared to be common to the ignorant of all nations. Among the German and Welch settlers in the interior of Pennsylvania, and their descendants, it is very common to attribute all obscure chronic diseases, as well as epilepsy, chorea, and convulsions generally, to the malignant influence of some individual possessed of the power of witchcraft, and to resort to counter charms for their removal. Even in the immediate vicinity of Philadelphia, Dr. C. has met with many persons who entertain a similar belief, and act upon it in a manner to evince the firmness of their convictions as to its truth.

Dr. Griscom remarked, that it was a curious feature in many cases of insanity, that the individuals laboring under it, are capable of acting at times, in a manner so perfectly rational as to deceive completely those who converse with them. Dr. G. was called to visit a female supposed to be insane. After the most careful examination he could discover nothing amiss in the patient. On reporting the result to her brother, the latter was very much surprised. He said that on the previous morning she had been brought home by a police officer, laboring under the most decided hallucination of mind, declaring that her brother had endeavoured to poison her; that she had been pursued by persons in the street; that she had fled for safety &c., &c. Dr. G. again visited her, and on his alluding to her strange conduct on the occasion referred to, she explained all the circumstances with so much ingenuity, that he declined, until he was more fully satisfied of her insanity, to give a certificate authorizing her removal to an insane asylum.

Dr. Condie observed, in reference to Dr. Gibbons' third case, that a very common form of mental hallucination was that in which the patients believed themselves to be infested with vermin, or affected with the itch, or syphilis, or some other disgusting disease. He had met with many cases of this kind. It was in vain to attempt to reason them out of their belief, or to cure them by pretending to treat them as though they were actually infected in the manner in which they supposed themselves to be. In one instance, Dr. C. was consulted by a clergyman, from a distant state, distinguished for his learning and exemplary piety, whose first question was, could a person be affected with gonorrhœa and chancre who had never been exposed to infection from connection with a diseased female?

On a reply being given in the negative, he assured Dr. C. that he was now laboring under both, and yet he called his Maker to witness, that he had never been in the way of infection, unless he could have contracted the disease by going into a privy which had been previously occupied by a diseased person. The Doctor told him that he might probably be mistaken in regard to the character of the malady under which he was laboring. He replied that this could not be the case, that he had attentively studied the descriptions given by the best surgical writers, and that his symptoms corresponded with those laid down as diagnostic of gonorrhœa and chancre. These symptoms he then detailed with great accuracy. An examination was proposed, when to the astonishment of Dr. C. there was not the slightest appearance of ulceration about the penis, nor any indications of an inflamed condition of the urethra or of any morbid discharge from it. There was a very slight excoriation upon one side of the inner surface of the prepuce, which was removed in twenty-four hours by a weak solution of nitrate of silver. This gentleman evinced much displeasure when he was assured that he was not laboring under any form of venereal disease, and finding he could not succeed in convincing the Doctor that he had a very severe gonorrhœa and very decided chancre, to which he finally added an imaginary bubo in both groins, at the end of a few weeks he discontinued his calls. Dr. C. subsequently learned, that shortly after the return of this gentleman to his native state, he had manifested such decided indications of insanity, as to require his removal to an hospital.

Dr. Jackson remarked, that although imaginary syphilis was not mentioned in books on the venereal disease, yet he had seen many cases of it. No disease had given him more trouble. He has attended patients laboring under the hallucination that they were affected with some form of this malady for upwards of twelve months. In one case only had he succeeded in reasoning the patient out of his belief. He has never met with an instance in which the individuals had not had sexual intercourse from which they might have contracted the disease. Though in some the liability of its being contracted in this manner, was very doubtful. Has often salivated these patients. A man once said to him "now I have a true venereal chancre." He fancied that he saw an ulcer, when the cuticle was entirely sound. He was put under the influence of mercury, but his hallucination nevertheless continued. While his mouth was sore with this medicine, and in midwinter, he travelled from Northumberland to Philadelphia, and put himself under the care of the late Dr. Rousseau, who convinced him, after two months treatment, that Dr. Jackson's diagnosis had been correct.

Dr. Evans observed that several of the writers on insanity, notice the supposition of a venereal infection as a common hallucination. It is very common in male patients under forty years of age. One of the hallucinations of the patient whose case occupied so large a portion of public attention last spring, in consequence of the legal investigation to which it gave rise, was of this kind. Dr. Evans has often had cases in which the patients had never been exposed to infection, from impure connection.

Dr. Bell called attention to the fact that a want of love for children was not always to be taken as an indication of insanity. Cases are related by authors of known veracity and accuracy of observation, of individuals distinguished for the exemplary manner in which they discharged their duties as parents, who nevertheless were deficient in actual love for their offspring. Dr. B. referred to the instance of a lady who declared that she did not understand what love of children was, that in this respect, her own children were not any more to her than those of another. In her the true maternal feeling or instinct was entirely absent. She performed her duties to her offspring, but only from a sense of obligation, not from affection. This lady was amiable in all her social relations, and exemplary in her family duties.

Dr. Evans remarked, that the phases of insanity were very various, as one or other, few or many of the faculties of the mind were affected. He was called upon, on one occasion, by a clergyman from a neighbouring town, who, while he was in the enjoyment of good general health, laboured under an affliction which caused him indescribable distress, and interfered with the successful fulfilment of his pastoral duties. He had lost the power over his own will. He could not restrain the actions suggested by any present impulse. He had struggled with the infirmity for eighteen months but could not regain the power of self-control. One day upon ascending the stairs leading to his pulpit, an irresistible desire to shout took possession of him, and, accordingly, much to the surprise of his congregation and to his own mortification he commenced to shout aloud. On another occasion, whilst riding through the streets, a dog barked at his horse, and he began to bark, also; the impulse was irresistible. Though aware of the ridiculous position in which it placed him, he could not help it,—bark he must, and bark he did. Dr. Evans upon instituting an inquiry into the state of the functions of the several organs of the patient, found that the kidneys acted abnormally. The patient recollected that he had received a fall in which the small of his back was struck. Dr. E. advised him to give up his ministerial duties, and directed local depletion, with the use of uva ursi, balsamics, &c., in order to restore to the kidneys their healthful action. In a few months, as

the urinary secretion assumed its normal condition in respect to quantity and quality, the patient regained his wonted command of will, and was finally completely restored.

Dr. Wood related the case of a man, of middle age, admitted into the medical ward of the Pennsylvania Hospital. The left leg of the patient was enormously swollen, tense, hard and shining, and though œdematous, much firmer than in ordinary cases of dropsical effusion. The patient complained of pain in the posterior part of the pelvis on the left side, and experienced a sense of uneasiness deep in the pelvis, when pressure was made upon the pubis. The diagnosis was inflammation of the left iliac vein, causing an effusion of coagulable lymph within it, but not to a sufficient extent to arrest the circulation. A treatment in accordance with this diagnosis was adopted. The other leg soon commenced to swell in the same manner as the first. It was presumed that the inflammation had extended to the right iliac vein. The pulse was feeble and would not bear depletion. The patient was put under the use of blue pill, until salivation was induced. He improved rapidly for a time, but subsequently sank from debility. Upon an examination after death, the internal coat of the left iliac vein was ascertained to be thickened, and its surface rough and irregular, with effusion of lymph within the cavity of the vein. The right iliac vein was slightly affected. The liver was one mass of carcinoma. The patient had never complained of disease of this organ, nor was any disorder of it suspected. There was also disease of the heart. These organic changes had destroyed the patient. The points of interest in this case, are, the ease and tolerable certainty with which phlebitis of the iliac veins can be diagnosticated, and the confirmation it affords of the present views in relation to the pathology of the milk-leg in women.

[The account of the morbid appearances discovered after death in this case, are somewhat imperfect, Dr. Wood's absence in Europe, having prevented him from revising the notes taken by the reporter.]

Stated Meeting, March 5th, 1850.

Dr. Wood, President, in the chair.

Present thirty members.

Richard H. Townsend, M. D., was duly admitted a Fellow.

Dr. Betton presented to the Library, La Femme. Physiologie, Histoire, et Morale. Par P. Belouino, M. D. Paris, 1843.

The Committee appointed to revise the Pharmacopœia of the United States reported,

That they had attended to the duty committed to them, and present an interleaved copy of the Pharmacopœia, with such alterations and additions as, after a close examination of the subject, appeared to them to be advisable.

The Committee have been diligently engaged in the work of revision since the 26th of October last, meeting generally twice or three times a week, and, severally, devoting much time to the subject in the intervals of their meetings.

They respectfully suggest to the College the passage of the following resolution, and ask to be discharged.

Resolved, That the copy of the revised Pharmacopœia, prepared and presented by the Committee of revision, be put into the hands of the delegates from this body to the Convention which is to meet at Washington, on the first Monday in May next, with directions to submit the work to the Convention as the contribution of this College towards the proposed National revision.

GEO. B. WOOD,
FRANKLIN BACHE,
JOSEPH CARSON,
} Committee.

The report was approved, the Committee discharged, and the Resolution attached to the report adopted.

The Committee on subscriptions to Trust Fund reported progress, and were continued.

The Treasurer reported that, in obedience to the Resolution of the College, he had transferred the stocks, designated in said resolution, to the Trustees of Fund for erection of Hall.

A communication was received from Dr. B. R. WELLFORD of Fredericksburg, Virginia, acknowledging his election as an Associate.

A communication was received from the Secretary of the American Philosophical Society, acknowledging the receipt of No. 1, Vol. 3, of the Summary of Transactions.

Dr. MORRIS called the attention of the Fellows to one or more articles which had appeared in the Delaware County Republican, in which a portion of the medical profession in this City are

charged with dishonorable conduct, in entering into a collusive agreement with certain apothecaries to throw business into the hands of the latter, and to receive in consideration, at the expense of their patients, a percentage upon their prescriptions. When the following Resolution was unanimously adopted:

Resolved, That this College holds all collusion between physicians and apothecaries, whether in the view of pecuniary profit or patronage, to be in opposition to every principle of that moral code which the profession have adopted for their government, and no physician known to be guilty of such collusion would be recognised as a Fellow.

On motion, the Secretary was directed to transmit to Dr. Pennock a copy of the foregoing preamble and Resolution.

Dr. Gibbons called attention to one of the many means now resorted to, to extend the domain of quackery. He held in his hand what, at first view, appears to be a literary paper, purporting to be published, semi-monthly, in New York, at 50 cents per annum. Of the number he held in his hand, many hundred had been received at the Post Office of this City, regularly directed to persons residing here. The first and second pages were filled with literary matter, while the remaining pages contained the prospectus, and an exposition of the contents of a work on marriage, addressed to the vulgar tastes and sensual appetites of the community, and of which the publishers of the paper, are the proprietors. This, however, is only one of a class of pseudo-periodicals, large numbers of which are circulated gratuitously through the post-office, made up of a small amount of reading matter, and innumerable quack advertisements, and certificates in favour of nostrums recommended for the cure of every ailment to which man is subject, which are thus perused by thousands who would perhaps in no other way have ever heard of their existence.

Professor Jackson related some curious cases of supposed poisoning alledged to be produced by the malicious administration to the patients of the minute portions of bristle removed from the face in the operation of shaving.

On motion, it was resolved that an adjourned meeting, of the College be held on the 19th instant, at seven o'clock in the evening.

Adjourned Meeting, March 19th, 1850.

Dr. Norris in the chair.

Present twenty members.

Isaac Remington, M. D. was duly admitted a Fellow.

Dr. Condie stated that he had recently seen a number of cases of well marked measles in children. That in many of these cases, before the entire disappearance of the eruption, the patients were attacked with all the symptoms of scarlatina; the two forms of cutaneous eruption being present on different parts of the surface at the same time. In other cases the measles ran its entire course before the attack of scarlatina took place, but without any interval between the cessation of the one, and the occurrence of the other. In all of the cases the two diseases were well marked; in most, the scarlatina was mild, though always attended with a decided affection of the throat; in a few, however, the disease was very severe, the throat deeply affected, and the febrile symptoms very intense. In two cases there was extensive inflammation, terminating in suppuration of the parotid glands; one case was followed by deep seated inflammation of the ear, causing destruction of the tympanum, and permanent deafness. No cases terminated fatally.

Dr. Parrish remarked, that within a short period he had seen, what he believed was not usually met with in this city at the present season of the year, a number of well marked cases of acute dysentery in children as well as in adults. One of the cases terminated fatally. The disease was attended in all the cases by the symptoms which distinguished dysentery as it prevails in the autumn.

Others of the Fellows present, stated that they had met with similar cases.

Dr. H. H. Smith laid upon the table a wax cast taken from a colored patient, presenting, at first view, an apparent combination in the same individual, of the male and female organs.

Dr. C. D. Meigs presented his views of the pathology and treatment of coryza.

In the work of Bell and Stokes, on the practice of Medicine, (Vol. II. page 48,) there is an article by Dr. Bell on this disease, in

reading which, Dr. Meigs remarked, he had been struck with the coincidence of the views set forth in it, with those generally entertained by medical writers in regard to the disease in question. Dr. Bell, states, at page 49, that "In infantile subjects, coryza is a much more serious disease than it is in adults; as owing to the narrowness, naturally, of the nasal passages these last are more easily obstructed by thickened mucus, and hence great difficulty not to say impossibility of breathing when the child is at the breast." Dr. Bell goes on to show that between the calls of hunger, and if they are yeilded to, the danger of asphyxia, the little sufferer falls into a state of prostration and marasmus, unless fed by the spoon.

In saying that between its hunger and its dread of suffocation, the child falls into prostration or marasmus, it appeared to Dr. M. that like all the writers on coryza, with which he was acquainted, Dr. Bell has overlooked one of the most important features of this malady. Dr. M. believed he should be able to show that it is not from its deficient alimentation that the infant falls into that state of feebleness the author has portrayed, but from the want of a due oxygenation of its blood, in consequence of the interruption of the respiratory process, not merely while the infant is engaged in sucking, but from the very beginning and during the course of the disease. Dr. M. compared the case to one in which the due supply of oxygen being cut off, there is a state of imperfect asphyxia induced, and said that it tends to increase, *pari passu*, with the increased abundance of the mucosities of the nares, and still more with the increasing turgescence or thickening of the pituitary membrane.

In Dr. Wood's practice, (Vol. I. p. 735,) there is an article on coryza, in which mention is made of the disease in young infants, with a description of the phenomena observable at the time they go to the breast, when they sometimes turn black in the face or fall into convulsions. This description is good so far as it goes, but it would be more correct were it applied to the condition of the child when even not at the breast, in some of the severer cases of the disease.

A common cold in the head, or coryza, is a disorder of extremely variable duration; that is, in its acute form. Like many other diseases it is capable of assuming a chronic form. Many persons have attacks of coryza that go off in a single day—in others the disease lasts many days or even some months.

In infants, coryza is not unfrequently met with from the moment of birth. Dr. M. was not aware that in such cases the disease dates anterior to the birth of the infant, but unquestionably in many cases its presence is manifested from the moment the first inspiration is made. It is common to hear the remark in the lying-in chamber that the baby has a cold, or that it is born with it.

Coryza in the adult is a complaint, which for the most part does not interrupt the ordinary avocations of the patient, and though very troublesome, is not dangerous nor protracted. In young children on the contrary, it is in many cases fraught with perils of the gravest character. Inasmuch, Dr. M. remarked, as he had given a great deal of attention to coryza, and as it had caused him to reflect on the tendency of that disease to affect the health and even safety of the child in other respects than those connected with the changes it causes in the condition of the pituitary membrane, he had considered it his duty to offer some remarks in regard to it, to the College, which he would do as concisely as possible.

1st. Dr. M. remarked, there are three apertures into the space above the glottis: two of them are the nares, and one the mouth.

2d. The nares are the proper respiratory orifices.

3d. The mouth is not normally a respiratory orifice. It is used as a breathing aperture only occasionally, and nearly always under the control of the will. To breathe by the mouth is a voluntary act, except during sleep. To breathe by the nares is an involuntary act. The latter is normal, the former abnormal respiration.

4th. In the articulata and insects, and in the arachnides the aeration of the tissues is affected by means of tracheæ that open by stigmata on the sides of the rings. In insecta of many segments, numerous stigmata exist, each of which is the homologue of a nostril. In these animals the stomal orifice is totally separated from the apertures of the aerating cavities or tracheæ; in the mammals, birds and reptiles the respiratory orifices are all close to the mouth.

In a new born child, if the nostrils be accurately closed from the moment of birth, by adhesion, or by plugs of lint or other substance, which shall prevent all passage of air through them, the child immediately becomes distressed and ill. Dr. M. was of opinion that a perfect closure of the nares would suffice to deprive any young infant of its life in the course of a few days, even though the mouth and throat should be left in a perfectly natural condition. He had seen children become dangerously ill from plugs of dried mucus in the nostrils, or from occlusion of the sides of these orifices, whether in ordinary coryza or in that of scarlatina; and he has had occasion to observe great and rapid depravation of the general health of young persons, in consequence of the lodgement of a foreign body, such as a portion of rag, or paper, or a large seed, in one of the nostrils.

When both the nares are stopped up, so as wholly to shut up the respiratory passages, Dr. M. has, on several occasions, witnessed the death of the patient from that cause alone. To this it will be replied, that some persons affected with nasal polypus enjoy good health. He could not deny that persons may enjoy good

health under such circumstances, since he has not seen all the cases of polypus; but it was apposite for him to remark, that in those he had seen, the patients were not in the enjoyment of robust health in other respects. They have all been sickly looking persons; showing that their blood was badly aerated. But in reference to this objection, he remarked, that he was speaking of young children,—of the coryza neonati, and not of adult persons or their disorders; and that young infants are the subjects of an instinctive and not of a reasoning or free-willing-force. That obeying their natural instincts, they persist in attempts to breathe through the obstructed nares, whereas an adult, who cannot breathe through the nostrils, has reason which teaches him that he may do so through the mouth and fauces.

I repeat, Dr. M. remarked, that the nostrils are the homologues of the stigmata of the articulata, and therefore, that they are the true respiratory orifices or stigmata in man. That respiration (an involuntary act) takes place normally through them, and that when it does not do so, it is effected by volition. The infant has no volition *quoad hoc*, and it dies if its nostrils be closed, for it does not know that it can breathe by the mouth.

Dr. M. had many times made the observation, that young children severely afflicted with coryza will, if very much pressed by hunger, offer to take the nipple when presented to the lips, and desist again and again, until, in a moment of strong desire they take it into the mouth, and after a few rapid suctions start away from it in a sort of agony, breathing rapidly or crying with full opened mouth. The infant acts as though affected with *galactophobia*, the cause of which is, that the only possible entrance for air, that through the mouth, will not serve to breathe with and suck with at the same moment of time.

When we observe attentively the actions of an infant labouring under a severe affection of the pituitary membrane, the following symptoms may be noted. Let the child be sleepy. In its aspirations, the diaphragm and other respiratory muscles contract three or four consecutive times, but the lips being closed and the nostrils stopped up, no air enters the lungs. In the meantime asphyxiation begins, and the distressing sense of suffocation causes the child to start forward, throwing its arms wildly abroad, and opening its mouth to cry. A rush of air fills the lungs, which dissipates the incipient phenomena of asphyxia. The child relieved by this dose of oxygen to the blood, relapses into its efforts to breathe by the nares, until the carbonization of the blood reproducing the commencing asphyxia, it again starts wildly forward, aspires freely through the opened mouth and then relapses into its instinctive method of respiring. Dr. M. has noticed this state of things to last for several days, until the cure of the disease was effected, or, until by repeated delays and retardations of the act of oxygena-

tion of the blood in the lungs, the whole innervation-force has fallen lower and lower, and organ after organ, and function after function have ceased to carry on their several roles in the economy of life; the infant falling a victim to a disease of little importance in itself considered, yet capable, by its influence on the respiratory orifices, of developing a dangerous and even fatal train of pulmonary and nervous disorders. Dr. M. could not well perceive how we should avoid the conclusion, that a common coryza, a cold in the head, generally called snuffles, must prove very dangerous to the young child, provided it be not promptly relieved. Dr. Denman lost, Dr. M. believed, six out of eight cases. Dr. D. advised that the mouth should be kept open with a spoon handle in order that the tongue might be hindred from acting as a valve to the faucial orifice; but to keep the mouth open in this manner, during many hours, is impossible; it is too fatiguing, both for the patient and the assistants, and the attempt is always abandoned, as it was in Dr. Denman's cases.

Many cases, Dr. Meigs remarked, occur in children in which at first view there appears to exist disease of the lungs, when upon closer examination the whole of the symptoms will be found to depend upon the existence of coryza. He has often, on first looking upon a child, believed that it was laboring under a severe attack of catarrhal fever, but upon percussion, and upon testing the condition of the respiration, he has discovered that this was not the case; when, looking further, he has found that in consequence of an occlusion of the nares, not enough of oxygen was entering the lungs, and in consequence of the blood not being sufficiently aerated, there was deficient innervation, and all the immediate and remote consequences of severe disease of the lungs, without the latter being the real seat of the disease. Now, Dr. Meigs inquired, how shall I cure a child thus affected? Dr. Condie says, apply a leech to the nostrils. This would produce areolar inflammation, the swelling consequent upon which would further impede the passage of the air through the nares. Others say apply nitrate of silver to the inflamed pituitary membrane. But in place of following either prescription he should, with the old women of the nursery, content himself with simply anointing the nostrils with oil. Fifteen years ago Dr. M. thought to himself what do the old people do when they get a cold in the head; why they wrap up their head in a warm cloth: well, following this hint, he directed the head of the infant affected with coryza to be covered with a close fitting flannel cap, which he has found invariably to cure the disease in about seventy-two hours. Dr. M. has tested this plan of treatment in a great many cases, and has never known it to fail. On one occasion, the mother of a child for whom he directed the flannel cap, laughed at him; her infant appeared to her to be so very ill and the treatment recommended so inefficient. The child was only

laboring, however, under an obstruction of the nares; on the next day it was decidedly better, and on the third day entirely well.

The serious consequences which result from obstructions of the nostrils is too much overlooked in the treatment of other diseases than coryza. In a very severe case of typhoid fever, in the course of which Dr. M. was consulted, he found the patient breathing constantly through the open mouth; the tongue and palate were dry and the patient nearly insensible. The nares were obstructed in consequence of their lining membrane having become dry; consequently breathing through the natural respiratory orifices was rendered difficult if not impossible. Dr. M. directed the nostrils to be kept constantly moistened by means of a camel's hair pencil dipped in water. Dr. M. believes that this patient owed her life to this simple precaution: it allowed the air to pass freely into the lungs, and the blood to receive an increased amount of oxygen. The patient began, at any rate, gradually to improve and finally recovered. In all cases of protracted fever in future, Dr. M. remarked, he would be careful to keep the pituitary membrane of the nostrils always moist with water, or with glycerine which is very useful in such cases. He firmly believed that many patients have perished, who could have been saved had this important precaution, in their cases, been taken.

Dr. Condie remarked, that the observations we have just heard from Dr. Meigs, in regard to the source of suffering and danger in cases of coryza occurring in young children, were in the highest degree interesting, and most of them were highly important and corresponded with his own observations. He could not, however, agree with the Doctor, that the nares were in man the only respiratory orifices, and that instinctively, breathing was carried on solely through them. He believed that a little observation would convince any one, that the mouth was an important supplimental respiratory passage; respiration through which was not always voluntary but, under various physiological conditions, as perfectly instinctive as that through the nares. He admitted that in very young infants respiration was almost exclusively carried on by the latter, and hence the distress produced by even a temporary obstruction of these passages, and the imminent danger of a protracted impediment to the passage of the air through them. Coryza, in our climate, is of extremely frequent occurrence in infants; in numerous instances the affection of the lining membrane of the nares is trifling, producing but a slight difficulty of respiration while the child is suckling, and disappearing very speedily under the ordinary nursery management. In other cases, particularly when attended with membraniform exudation, the disease assumes a very formidable aspect, and is really one of a very serious character. In these cases there is a constant difficulty of respiration, not mere-

ly when the infant is at the breast, but in the intervals of suckling, as Dr. C. has pointed out in the chapter devoted to coryza in his work on diseases of children. He has no doubt that, in consequence of the impediment to respiration which occurs in the more severe cases, there is imperfect aeration of the blood and consequent depression of the vital powers, but still is convinced, that in uncomplicated cases, the emaciation and extreme debility of the patient, terminating often in death, is the result of inanition, from the inability of the infant to partake of a sufficient amount of its appropriate nourishment. Could the infant suck with freedom, its life would seldom be endangered by simple, uncomplicated coryza. It is only in the more violent cases of the disease, that Dr. Condie recommends leeches, and from their use he has never seen any of the bad consequences ascribed to them by Dr. Meigs produced; they have always given decided relief to the patient. In the milder cases, and those of most frequent occurrence the plan of treatment recommended by Dr. M. may do very well: he believed, however, that all the good effects produced by the flannel cap of Dr. M. would be derived from keeping the air of the nursery at a proper temperature. Dr. C. would not be willing to trust to the treatment proposed by Dr. M. in a case of coryza attended with membraniform exudation upon the lining membrane of the nostrils, and he was well convinced that in those cases of occasional occurrence, in which the coryza is attended with diptheritic effusion in the fauces, and a diseased condition of the mucous membrane of the intestines, under its use, a cure would scarcely be effected.

Dr. Bell observed, that in reference to the strictures which Dr. Meigs had offered upon the account given of coryza in Bell and Stokes' work on the practice of medicine, he had very little to say. Should he be called upon again to write upon the disease in question he should probably be induced to extend or even modify his account of its pathology from the hints that have been offered by Dr. Meigs. Dr. B. could not agree, however, with that gentleman in his statement, that the necessary instinctive mode of respiration is by the mouth alone. Persons during sleep breathe through the open mouth instinctively, the same is the case during active exercise. In diseases in which the brain is oppressed and volition ceases, we see the same thing. Dr. Bell breathes by his mouth during sleep, and it costs him an effort to breathe through the nostrils alone. He was convinced that respiration can be carried on by the mouth as well by the infant as by the adult. Nor could he believe that in coryza the danger depends upon the defective aeration of the blood, at least not to the extent supposed by Dr. M. There is seldom in this disease entire occlusion of the nostrils, and Dr. M. admits that full respiration is carried on at intervals by the mouth.

In judging of the physiological acts of the human organism, references to comparative anatomy may mislead. In relation to the subject under discussion, we find that respiration is carried on in many of the inferior animals very differently from what it is in man. Insects breathe by numerous tubes. Frogs swallow the air. Man is provided with the nostrils as the ordinary respiratory passages, and with a supplimentary breathing aperture, the mouth, which may assist the former in passing air to or from the lungs or even carry on the entire process of respiration when the nares are obstructed or occluded.

But after all, the practical observations of Dr. Meigs, are of the most importance. Dr. Bell believed that the flannel cap did good in cases of coryza, simply because Dr. M. says that he has found it to do so from experience of its effect, and in the accuracy of his habits of observation and the candor of his statements Dr. B. placed full reliance. *A priori*, it is true, we might object to it, arguing, that from the increased heat of the head to which it would give rise, it would necessarily produce an augmented afflux of blood to that part, in which the vessels of the nostrils would participate, as, in the same manner we might object to leeches applied near the affected parts, from the afflux of blood caused by them, and the subsequent effusion into the areolar tissue, which in some cases might deter us from their use. The cap may produce a copious perspiration from the scalp and to this its good effects in coryza are probably due. In the coryzal form of influenza in adults, leeching affords immediate relief, and there are no doubt cases of coryza occurring in children, where a leech or two may produce similar effects. Dr. Bell had not been of late years very fond of dosing, he still, however, thought that a little castor oil is very useful in coryza and would certainly recommend it; all affections of the head being relieved by purgation. He would, also, consider the warm bath, by the general perspiration induced by it, an excellent prescription. In other cases symptoms might occur calling for other remedies. Dr. Condie, he thought overrated the efficacy of warmth of the air of the room occupied by the patient. Drafts and currents are of common occurrence and can scarcely be guarded against with a proper attention to ventilation, and hence the necessity of maintaining an increased temperature of the body or any portion of it, in cases in which this is desirable, by appropriate coverings.

Dr. Evans could not understand how, in the case of the patient laboring under typhoid fever referred to by Dr. Meigs, a simple drying of the mucous membrane of the nostrils should produce the very serious consequences that have been attributed to it. Even had the nares been entirely closed up in that case, the mouth of the patient would have still enabled her to breathe. The mouth is under many circumstances as natural a respiratory

orifice as the nostrils. During active exercise we breathe instinctively as freely by the mouth as by the nares, the same is the case, also, in many affections of the nose and palate in which the nostrils are more or less completely closed. In young infants laboring under coryza, respiration is effected by the mouth, and the only interruption to it is that which occurs while the child is at the breast. Dr. Evans has never seen any dangerous symptoms occur in coryza unless it was attended by pellicular exudation.

Dr. Pepper thought that Dr. Meigs has attached more importance to the obstruction of the nares in cases of coryza than actually belonged to it. Dr. P. has seen a great many cases of the disease in children and had always found the patients to breathe very well; he had noticed no special evidence of deficient aeration of the blood to occur in this disease. He had himself labored for a long time under a thickening of the Schneiderian membrane, but had experienced no particular inconvenience from it. Dr. M's. remarks may be correct as to the danger attendant upon obstructions of the nostrils in very young infants but they will not certainly apply to patients of more advanced age. The mouth as a respiratory passage is unquestionably supplimental to the nose. In typhus fever it is important to keep the nostrils open in order to ensure full respiration.

Dr. Meigs replied that he believed with the naturalists, that the living thing in man is the nervous mass; that it alone imparts life to the other portions of his organism: but the nervous mass is only alive when in contact with oxygen brought to it by the arterial blood; deprived of oxygen it dies. Respiration is the function by which the oxygen is imparted to the blood. Every impediment to the freedom of respiration, by depriving the blood of its full dose of oxygen, diminishes the vitality of the nervous mass and consequently the life force of every organ of the body. The nostrils in man are the true respiratory orifices; to these the mouth is merely adjuvant; it is not the natural instinctive orifice; breathing by it is a voluntary, a forced act. If the nares, in consequence of a diseased condition of their pituitary membrane or from any other cause, become obstructed, the mouth is opened to admit the air into the lungs, but the interior of the mouth soon becomes dry and the air does not readily pass over its surface thus deprived of the natural moisture. Let any one close completely his nostrils and attempt to breathe for a time by his mouth alone, and very soon he will experience the agony of angina pectoris. Children will die of asphyxia if their nares, their natural instinctive breathing orifices, be completely obstructed. Dr. Denman says so, and Dr. M. believed it. He once saw a child which was supposed to be dying: all the family were around it awaiting its dissolution. It was breathing only

three or four times in a minute. Dr. M. found that its respiratory orifices were plugged up, so as completely to arrest the passage of air through them: on removing the obstruction respiration was restored and the child quickly recovered. Children laboring under coryza do not die of complete asphyxia, because the orifices are never completely occluded, but there is so great an impediment to the passage of the air that the aeration of the blood becomes defective, and the nervous mass is deprived of its full dose of oxygen; it is, consequently, deficient in its power of imparting life force to the several organs, and from the languid and inefficient manner in which these perform their functions innervation does not go on actively, it languishes and finally ceases.

In regard to his mode of treating coryza in young children, Dr. Meigs remarked, that having for the last fifteen years been in the habit of seeing many cases of the disease, and having directed nothing but the cap--no oil, no medicine of any kind, he can speak of its curative effects with confidence. Dr. M. has seen cases of extreme difficulty of respiration in children from accidental mechanical obstruction of the nares, in which all difficulty vanished upon the removal of such obstruction. He urged upon physicians the importance of attending to keep the pituitary membrane of the nares moistened in all protracted diseases.

Dr. M. did not consider, that cases of coryza attended with a diptheritic deposit constituted any specific form of the disease; these deposits take place in various inflammations of the mucous membrane, when this is deprived, in consequence of inflammation, of its epithelium. In ordinary coryza these deposits may occur.

Dr. M. remarked, that he agreed with some of the Fellows who had so spoken, that a child *can* breathe by the mouth, but must still insist that the mouth is not the natural instinctive respiratory orifice, it is the crying orifice, the sucking orifice; man has but two proper breathing orifices, these are the nares; in health he never breathes instinctively through the mouth.

Stated Meeting, April 2nd, 1850.

Dr. Wood, President, in the chair.

Present thirty-five members.

The committee on subscription to Trust Fund reported progress and were continued.

Dr. Neill, Curator, reported the addition of a number of pathological preparations to the Cabinet.

Propositions (13 and 14) for Fellowship were presented.

The following amendment to the Ordinances was proposed:

Chapter II. Sec. 5.

To strike out the whole of the third line and the word "meeting" in the fourth line, and to insert "But no candidate for Fellowship shall be balloted for excepting at the stated meetings in January, April, July, and October." And to alter the remainder of the section so as to read, "when, if three-fourths of the Fellows present vote in favour of the candidate, he shall be pronounced duly elected; *provided*, that no balloting for a candidate shall be gone into, unless there be present at least twenty Fellows."

Dr. Hays presented an outline of the case from which was obtained the diseased kidney presented by the Curator this evening. The gentleman had experienced no symptoms, it was stated by his family, indicative of any positive disease. He had been ailing for some time, and had within a short period, become emaciated and lost strength. He had a pallid jaundiced hue of the skin. He went to the mountains of Vermont. After his return he consulted a homœpathic practitioner, under whose care he continued for six weeks; but the patient having got worse under infinitesimal doses, the charlatan was dismissed, and Dr. Hays sent for. Dr. H. found the patient laboring under great difficulty of respiration, with extreme jactitation, and almost incessant efforts to vomit. It was impossible to keep him sufficiently still to institute an examination into the condition of his chest. It was ascertained, however, that his heart beat with great violence. He was directed small doses of calomel, with mustard poultices to his chest. In the evening the same symptoms continued; the addition of an eighth of a grain of morphia to the calomel was directed, with an injection to open the bowels; the latter, was however not given. On the next morning Dr. H. found the patient setting up in a half comatose condition. His respiration was good, his heart acted tumultuously, but no organic disease could be detected. Had passed no water since last evening; suffered at intervals violent pain of the head, but had no other acute suffering. A catheter was introduced, and a small quantity of urine, all the bladder contained, was drawn off. He gradually sunk, and died in the course of the day. On examination, the brain was found to be healthy; about some of the vessels at its base, there was a deposit of what appeared to be a granular fatty matter. There was no effusion. The spinal marrow exhibited no mark of disease. The kidneys and liver were in a state of cirrhosis, the other organs of the abdomen and those of the chest were healthy.

Dr. Neill called the attention of the College to the fact that no satisfactory explanation had yet been offered of the manner in which external impressions made upon the teeth are conveyed to their nervous pulp within. There is no difficulty in understanding the manner in which the nerves of the eye, of the olfactory organs, of the tongue, the skin, &c., are reached by the impressions for the reception and transmission of which they are respectively designed. But in the teeth the nerves are inclosed in a bony case; and yet experience teaches us that impressions made upon the teeth do reach the nerve within, and are conveyed through it to the nervous centre. How then is it that heat, cold, acids, or pressure when applied to the external surface of the teeth affect the nervous pulp within them? Some may suppose that the impression is transmitted to the nerve through the gums. It is doubtful whether the gums in their ordinary healthy condition possess any very great amount of nervous sensibility, at any rate this explanation is untenable. The old doctrine of increased sensibility of the teeth from inflammation has passed away: the teeth have neither blood vessels nor nerves, and consequently cannot become the seat of inflammation. Dr. Neill believed that the transmission of impressions through the teeth may be explained by a reference to their anatomical structure. The parietes of the tooth are not perfectly solid; even the enamel is composed of a congeries of hexagonal prisms, which are not in perfect juxtaposition. This may be shown by the microscope. The bony portion beneath the enamel is even less solid, it is somewhat allied to bone, and consists of a number of minute hollow tubules, which pass from the circumference to the centre of the teeth, with the internal cavity of which they communicate; these tubules are filled with a fluid secreted by the pulp. Now if the tubules, thus filled, pass from the circumference to the interior of the teeth, may not pressure applied without, by compressing the enamel and the fluid of the tubules, affect the nervous pulp within, by subjecting the latter to a species of hydrostatic pressure, the amount of which can be measured? Whatever reduces the thickness of the enamel, or uncovers any portion of the dentine increases the painful impressions caused by external pressure. Thus acid, by removing the mucus by which the teeth are ordinarily covered and perhaps a portion of the enamel, increases their sensibility to external impressions. When the teeth have been affected by acids, no disagreeable sensation is experienced until pressure is made upon them. Mr. Naysmith, it is true, denies the tubular structure of the dentine, but it is admitted by all other writers on the anatomy of the teeth. Dr. Neill presented a specimen which would, he remarked, under the microscope, show very clearly the tubular structure of the dentine. Of the conveyance of impression to nervous expansions by hydrostatic pressure, we have an example in the ear. Dr. Neill supposed

that all those substances which are known to relieve tooth ache, when applied to the affected tooth, acted by coagulating the fluid of the tubuli, and thus preventing hydrostatic pressure.

Dr. Gibbons would inquire how, upon the hypothesis advanced by Dr. Neill, was to be explained the fact that the contact of sugar with the teeth will produce pain, even when the teeth are unaffected with caries.

Dr. Condie replied that he suspected there was little foundation for the opinion that the use of sugar produced pain in the teeth and had a tendency to cause their destruction. In the Island of Jamacia the negroes, during crop time, almost live upon the juice of the cane, and there are few persons who possess sounder and whiter teeth, or by whom tooth ache is so seldom experienced. Notwithstanding the great quantities of sugar or saccharine matter which is consumed in the United States, Dr. C. has never been able to verify the supposition that pain of the teeth, when in a healthy condition, was caused by the contact of sugar with them. He knew that when the teeth are affected with caries, pain will often be excited by eating sugar. In these cases it is caused by particles of the sugar being admitted into the carious portions of the teeth and acting mechanically upon the denuded nerve, or by undergoing rapidly the acetous fermentation, proving thus a source of irritation.

Dr. Condie was much pleased with the views thrown out by Dr. Neill, they appeared to him to explain very satisfactorily the painful sensations producted whenever strong pressure is made upon the teeth, but could not perceive how the anatomical structure of the teeth explained the pain produced in the teeth when cold or heat is applied to them. Is not the sensation in the nerve in these cases caused by the change in the temperature of its bony case?

Dr. Meigs denied that the teeth were devoid of nerves other than the pulp contained within their central cavity. When a portion of enamel is lost, by accident, or destroyed by disease we often find the tooth to be partially restored; the denuded portion of the tooth becoming covered by a thick cement. Now, is this restoration produced merely by a spontaneous coagulation of certain fluids, or is it not the result of a vital process? He has seen a tooth half destroyed by caries and attrition, become perfectly sound, the diseased surfaces being covered by the exudation of cement. Dr. M. believes that this was effected by a vital process somewhat similar to a low grade of inflammation of the dentine, and consequently, indicating the presence of nervous matter. Dr. Neill denies the existence of nervous matter in the teeth, does he then deny the vitality of the teeth? The dentine can-

not live without the presence of nervous matter. Dr. M. can conceive of nothing being alive in the animal organization without the presence of nerve corpuscles; life, with him, always implies their existence.

Dr. Neill replied, that the hair of the head had no nervous organization, or blood vessel arrangement, the same was the case with the nails and cuticle. Still these parts possess a species of vitality, their growth being the result of imbibition. When a tooth has been fractured there is often an increase of sensibility from exposure of the nerve to the air. With regard to the reparation of decayed or fractured teeth by the formation of a cementum, he had his doubts. The cementum is not produced by the tooth itself, but by the periosteal lining of the alveolus, and hence he cannot believe that it can be formed over the surface of a broken or decayed tooth. What has been taken for cementum upon the crowns of the teeth he supposed was a deposit of tartar. This, however, can only be determined by the microscope. The actual existence of nervous matter has not been proved in regard to every species of vital organism; vegetables are organized and have life, but so far as we know are destitute of nervous corpuscles. There are also many of the inferior orders of animals in which no nerves have been detected, hence the position assumed by Dr. Meigs that life implies the existence of nervous corpuscles is at best but a petitio principii.

Dr. Hays observed, that all that seemed to be necessary to constitute an animal, was a simple membranous bag that will admit of endosmose and exosmose. All its functions are confined to these two acts, and neither nerves, nor vessels were necessary. It will not do to say in reference to this species of organization, that, as it is alive, it must have nerves.

Dr. Bell instanced the two opposing currents, the ascending and descending sap, in vegetables, as a vital action, carried on without the known intervention of nervous matter. The presence of nervous matter cannot always be shown to exist in organized living beings; nerves, and nervous centres, certainly, do not exist. The presence of nervous corpuscles may be inferred, it is true; but in the present condition of physiology it is unsafe to infer the presence of any of the animal tissues, in cases in which upon the most minute investigation, aided by the most powerful microscopes, no trace of their existence can be detected. Actions take place in the living human body, which do not necessarily demand for their performance the presence of nerves.

Dr. Coates suggested, whether in investigating the mode in which impressions are conveyed through the parieties of the teeth

to the nervous pulp inclosed in their central cavity, too much stress had not been placed upon a supposed necessity of a mediate or immediate connection being formed between the place of impression, and the nerve. In the human body, the nerves of ordinary feeling are at no place in actual contact with every point of a sentient surface. There are spaces of a very measurable width between the nervous terminations; while sensibility extends over the whole surface, and consequently, over these intervening spaces. Dr. C. submitted, therefore, that a part at least of the phenomena attributed to the sensibility of the teeth, might be explained by the general fact, established, he believed, in physiology, that sensation, as well as other nervous actions, extended beyond actual contact with a nervous filament.

Dr. Meigs remarked, that this was unquestionably true. All the parts of the body are isolated as it were by epithelial tissues, consequently we must have a sensibility extending beyond the point of actual nervous contact. In some animals voluntary actions are dependent upon external impressions derived without actual contact with the objects by which the impressions are produced. A bat feels the presence of a wall before it touches it. Dr. M. would still maintain that there could exist no living organization without the presence of nervous matter. The only living thing with him is nerve. It constitutes the actuality of every living being; every other part and organ are subsidiary to it, as instruments through which its vitality was manifested, and by which the nervous living ens was connected with, and acted upon, external matter, and, was connected with other independent nervous existences. In the lowest class of animals, the nervous matter was disseminated in the form of nervous corpuscles; in a higher class, the nervous matter was connected by ganglia, and in the highest order, the multiplicity of organs and augmented sphere of the functions demanded particular nervous centres, united to every part and portion of the body by means of various sets of nerves, proceeding from the centres to the organs under their control, in order to communicate to these their special vitality, or, from the latter to the centres, to convey to these the sensations originating in the organs. In the lowest class of animals, each part possessed within itself all the nervous matter necessary for its low grade of organization and simple and limited sphere of functions, and hence when separated from the other, could carry on an independent existence. But in the highest orders of animals, each part, depending for its vitality upon the nervous centres, must necessarily die whenever its connection with these centres is destroyed.

Dr. Jackson remarked, that in the year 1809, he discovered that his two middle incisors in the upper jaw were beginning to decay;

that he consulted the foremost dentist then in Philadelphia, who said, "let them alone." In 1816 he found that the decay was increasing and he filed it away, cutting down quite into the bone. That by great care in keeping the parts clean, these teeth have been entirely preserved from further decay now more than thirty-four years.

Dr. Neill remarked, that the strong resemblance which tartar often bore to cementum might very easily deceive. They were very dissimilar in their structure as shown by the microscope. In many cases the deposition of tartar is of great firmness, and adhered with so much tenacity to the teeth that it could with difficulty be removed. This was often evidenced in the teeth of subjects brought into the dissecting room.

Dr. Gibbons suggested that the case of the bat feeling in the day time the wall before it touches it, could be explained by the waves of air repelled from the wall, or by the difference of sounds which occur in the vicinity of the wall. Though the bat sees with difficulty in the light of day, it nevertheless hears. In a dark entry, the slightest sound will enable the proximity of the wall or of a closed door to be detected.

Dr. Evans called the attention of the Fellows to a form of disease that he has repeatedly met with in females, and, which does not appear to be generally noticed in the books that treat of the Diseases of Women. The affection to which he referred was a diseased condition of the rectum, occurring in females who had been long labouring under retroversion of the uterus, and also in cases where instruments have been constantly worn for the replacement and retention in situ of the dislocated organ. Some years since he was consulted in the case of a female who complained of great pain in the region of the pelvis, extending up along the sacrum. She experienced the severest agony whenever the bowels were opened. Dr. E. at first supposed that she might be labouring under a neuralgic affection of the nerves of the pelvis. On inquiring of the patient whether she had ever suffered under disease of the womb, he was informed that many years ago she had been under the care of Dr. Dewees, in consequence of a womb complaint, for which he had introduced an instrument that she had worn constantly for ten or twelve years. On an examination per vaginum, Dr. Evans discovered the presence of a glass pessary, which was so completely imbedded by the tumefaction of the vaginal parietes, that its removal was effected with great difficulty. Whenever the least degree of pressure was made upon the instrument in the efforts to remove it, severe pain was experienced by the patient, extending upwards along the course of the

sacrum. Soon after the extraction of the pessary the patient experienced great relief, and in a few days, all pain and all difficulty in the act of defecation ceased.

On another occasion, a female was brought to the City for medical advice, said to be labouring under a stricture of the rectum. The symptoms in this were similar to those complained of in the first case, accompanied with great emaciation. She had been formerly under treatment for displacement of the womb. On exploring the rectum, Dr. Evans discovered a projection into it nearly closing the bowel, which rendered it difficult to pass the finger, and producing acute pain when touched. A more accurate examination showed that the projection was caused by the presence of a glass pessary, which it was ascertained had remained in the vagina for a long time. It was removed, and all symptoms of disease speedily disappeared.

In a number of other instances, Dr. E. has met with the same train of symptoms resulting from the same cause. He is persuaded that many cases of ill health which are supposed to result exclusively from retroversion of the womb, and other cases where instruments are constantly worn to obviate displacement, are in fact produced by a disease of the rectum, caused by the constant pressure of the retroverted uterus, or of the pessary. Sometimes ulceration of the rectum is thus induced. In two cases, his friend, Dr. Pancoast informed him, he had, by means of the speculum ani, ascertained that ulceration of the rectum had occurred to a considerable extent. In conjunction with the removal of the pessary in those cases, Dr. Evans suggested frequent injections of cold water per anum, and when ulceration has taken place, the application of nitrate of silver by means of the speculum.

Dr. Meigs referred to the work of Colombat D'L'Isére on the Diseases of Females, in which the affection of the rectum described by Dr. Evans is very fully noticed. That author mentions one case in which the pessary had been introduced thirty years previously, and several instances in which ulceration had extended through the parietes of the vagina and rectum.

Dr. Morris remarked, that disease of the rectum is not always caused by the presence of a pessary in the vaginia. Difficult and painful defecation may be the result of pressure of the retroverted uterus upon the rectum. Has a lady now under his care, in whom, from this cause, there has been produced an exalted sensibility of the sacral nerves.

Dr. Bell called attention to the fact, that accumulations of fœces in the rectum would often give rise to a train of symptoms similar, in some respects, to those described by Dr. Evans, and in cases in

which the patients did not themselves suspect that such accumulations had taken place. He adduced the case of a middle aged lady, for whom he was consulted, in consequence of her experiencing an attack of intense bearing down pain, attended with inability to urinate. Very soon, however, a free discharge of urine took place, and the pain subsided. She said that her bowels had been relieved every day, but finding that they were really costive, Dr. B. directed an injection. A short time after this was administered, she rose from bed, with violent bearing down pains, to evacuate her bowels. This being repeated the next day there was again excessive pain upon defecation. On examination *per vaginam*, a large body was detected at the posterior part of the cavity which was ascertained to be the rectum distended with hardened fæces. Upon the administration, at first of enemata, and afterwards of purgatives, the retained fæces were brought away, and the patient was relieved from all pain and inconvenience.

Stated Meeting, May 7th, 1850.

Dr. Meigs, Vice President, in the chair.

Present, twenty-three members.

The Committee on subscriptions to Trust Fund, reported progress and were continued.

The amendments to the Ordinances proposed at the last meeting were taken up and adopted.

Dr. Gibbons presented and read the Annual Report on Meteorology and Epidemics.

Dr. Atlee read an account of some

Cases of Erysipelas following Vaccination.

1. February 28th, 1850. I vaccinated a male child, aged four months. It passed regularly through all the stages of vaccine disease, and I considered it a case of perfect vaccination. The virus used had been taken from a healthy child, and nothing unusual had occurred in several other children vaccinated with it. On the 15th of March, I called for the purpose of detaching the scab. With the nail of my index-finger I loosened it around its edge, but on attempting its removal, found it so very adherent in the centre, that I thought best to allow it to remain. Next day, how-

ever, at noon, the scab fell off. On the 19th, a spot of inflammation was observed on the outside of the arm, about one inch below the cicatrix, and on the 20th, it had increased so much that I was sent for. At this time the inflammation had extended to the apex of the shoulder above, and to the elbow below, meeting on the arm so as to surround the cicatrix. Immediately at the scar the skin was red, in the form of a regular areola, about the size of a half dime, encircling which was a white belt, about the size of a mature vaccine areola, and beyond this was the intense erysipelatous blush pervading the remainder of the arm. The inflammation travelled, as is usual in erysipelas, day after day, towards the hand, leaving the upper part of the arm, and entirely disappeared through the fingers by the 27th.

The scab, which had separated on the 16th, three days before any appearance of inflammation, was given to me on the 22nd. I put it into my vaccine box with other matter, making the remark at the time, that I would not have kept it had the inflammation supervened before its removal; but, under the circumstances stated, I considered its employment perfectly safe, and, as vaccine virus was scarce, I would use it.

2. March 23rd. Vaccinated a female child, aged three months. Passed regularly through the disease. Scab came off April 23rd. Both it and the areola were smaller than usual.

3. March 26th. Vaccinated a male child, aged two months. Regular, but accompanied with excessive vaccine inflammation. No erysipelas. Scab separated April 14th.

4. March 29th. Vaccinated a male child, aged ten months. Vaccine inflammation commenced on Monday, April 1st. On Tuesday the inflammation had greatly increased, but was located principally *above* the scar. It continued to increase rapidly towards the shoulder, at the same time the vesicle itself began to dry. Thursday and Friday, the 4th and 5th, it was intense, though well defined, not diffused; its lower boundary being the scar, the upper the apex of the shoulder. It now had all the characteristics of phlegmonous inflammation. Saturday the scab fell off. Sunday, the 7th, the centre of the inflamed part was prominent and discolored, resembling cuticle with a deposit beneath it of a greenish-yellow pus. Monday, this central point broke and discharged like a furunculus. It continued to throw off pus until the 22nd of April, at which time a scab formed.

5. March 30th. Vaccinated a female child, aged three and a half months. I saw it on Wednesday, April 3rd, and considered that the vaccine inflammation had commenced in the proper way. The day before, the child in the nurse's arms, suddenly cried out with great pain, and could not be pacified for ten or fifteen minutes. Soon after, it was noticed that the vaccinated spot had the appearance of having been rubbed. The inflammation rapidly increased.

On the 5th, it appeared, in blotches on the shoulder. I was sent for, Saturday the 6th, and was alarmed at the extent and character of the inflammation. It extended over the whole upper arm, from the elbow to the neck and back of the shoulders, and was clearly erysipelatous. On the shoulder and back the skin was motled red and white. The action of the vesicle seemed checked: around it was a small circle of inflammation, and surrounding this, in the usual place of the vaccine areola, and about its size when matured, was a whitish circle, and again beyond this was the vivid erysipelatious blush. On the elbow it was particularly intense. Sunday, the 7th, it had extended to the breast, lower jaw, and to the wrist. Monday, the inflammation above the scab began to subside, while below the elbow it became more intense, and progressed into the hand. By the 12th, it had entirely disappeared, the last being on the fingers.

6. April 1st. Vaccinated a male child, aged four months. Nothing remarkable occurred, excepting that the areola was oblong.

7. April 2nd. Vaccinated a female child, aged 3 months. Saturday the 6th, inflammation set in around the spot and increased rapidly. Sunday, I saw the child: erysipelatous inflammation existed from the shoulder to the elbow, accompanied with the peculiar phenomena described in case 5th, in regard to the several areola. By the 11th, the inflammation passed away through the fingers.

8. April 3rd. Vaccinated a male child, aged three months. Passed through the vaccine disease regularly.

9. Same day. Vaccinated a female child, aged five months. It did not take the vaccine disease, and no inflammation followed.

After this I cleansed my vaccine plates and lancet, and operated with other virus, kept in the same box with the above, from which time no other cases of erysipelas supervened.

In the 1st, 4th, 5th, and 7th cases, there was great disturbance of the general system: fever, fretfulness, nervousness, occasional vomiting, flatulence, loss of apetite, &c. In the 2nd and 3rd cases, the virus used was probably not the same as that employed in all the other cases, it being most likely, the matter remaining on the plates from previous operations. This I think was the case in the 2nd, while in the 3rd case there might have been a mixture with that taken from the arm of the child. With respect to the other cases, this last matter was used.

Several interesting and important questions arising out of the above facts, naturally suggest themselves:

1. Did my finger nail communicate any poison to the tender cicatrix or to the scab, in case 1st, on the 15th of March?

2. If so, did the poison innoculate that child so as to produce erysipelas four days after, and one inch from the point of contact?

3. Did it accomplish this, as does vaccination, by a specific influence upon the general system?

4. Could the substance of the scab have been so tainted by the poison as to render it capable of communicating disease to others?

5. Or, did the mere detachment of the scab on the 15th of March, apart from the presence of poisonous matter, induce erysipelatous inflammation as a consequence of local irritation?

6. If so, how can be explained the communication of erysipelas to others by a scab which had exfoliated three days before the first appearance of erysipelas in the individual from which the scab was taken?

7. Can erysipelas be communicated by innoculation as a specific disease with matter taken from an erysipelatous sore?

8. Will a vaccine scab, charged with erysipelatous matter, produce sometimes pure phlegmonous inflammation, sometimes erysipelas, and sometimes regular vaccine disease free from erysipelas?

9. Will a spurious or infected scab vitiate other virus when kept in contact with it?

In order to ascertain whether any poisonous material could have been communicated to the scab or arm by my finger, I examined my day-book, and found that on the same day I attended to the following cases:—

1. Dressed a foot, which had been crushed on the rail-road February 4th, and which, at one point, had the erysipelas-like blush indicative of deep-seated confined pus.

2. Dressed a hand, from which three fingers had been amputated on the 28th of February. Inflammation healthy.

3. Dressed a wound left by the removal of a breast on the 7th of March. Inflammation healthy.

4. Cauterized an ulcerated os uteri. Cicatrization nearly completed.

5. I had at the same time an office patient affected with phlegmonous erysipelas of the hand, but have no recollection of having touched this, as it was left to the care of one of my pupils.

These are the only cases which could possibly have had any relation to the above case, and after meddling with these, my hands were washed with soap and water.

The following proposed amendment to the Ordinances was presented.

To insert in Chapter II, Sec. 5, after the word "October," the following clause: "Five negative votes being deposited, the candidate shall be rejected;" and strike out the following clause: "and if three-fourths of the Fellows present vote in his favour, he shall be pronounced duly elected."

Stated Meeting, June 4th, 1850.

Dr. Meigs, Vice President, in the chair.

Present, twenty-nine members.

The Committee on subscriptions to Trust Fund, reported progress and were continued.

The Curator reported several additions to the Pathological Cabinet.

The Following works were presented to the Library by Dr. Hays.

Om Brugen af de ved Rosenberg Sundhedsbrönde tilberedte Mineralvande.

An account of the Proceedings of the Government, Metropolitan Police in the City of Canton; By James Henry, M. D.

Denkwürdigkeiten aus der Medicinishchen und Chirurgischen Praxis, Von, Dr. Georg Frederik Most.

Ueber den Tetanus Von Beatus von Tscharner.

Om de Sanitaire Forholde i Fängsten efter Nyere Systemer, ved Professor Frederik Holst, M. D.

Briefe über de Zwanzigste versammlung Deutscher Naturforscher und Aerzte zu Mainz, von G. Ludwig Dieterich.

Repertorisches jahrbuch für die Liestungen der Gesammtem Heilkunde in jahre, 1838, von Johann Jacob Sachs.

Together with a number of pamphlets on various subjects.

The Treasurer presented his Annual Report, which was referred to the Censors.

The Vice President, in the absence of the President, appointed the Standing Committees for the ensuing twelve months, as follows:

On the *Library*, Drs. West, Pepper, and Reese.
Public Hygiene, Dr. John Bell.
Theory and Practice of Medicine, Dr. Samuel Jackson.
Surgery, Dr. Isaac Parrish.
Diseases of Women, Dr. Lewis Rodman.
Diseases of Children, Dr. D. Francis Condie.
Midwifery, Dr. John D. Griscom.
Meteorology and Epidemics,
Dr. W. J. W. Ruschenberger.
Materia Medica, Dr. Joseph Carson.

Dr. Neill called the attention of the Fellows of the College to the *Comparative size and shape of the Thyroid Foramen in the Male and Female Innominatum.*

He believed that many teachers of Anatomy and of Obstetrics were in error upon this subject, while others had failed to point out the difference in the male and female pelvis in this respect; that this was the case especially in this city, and perhaps in this country generally.

He had learned that Dr. Wistar and Dr. James taught that in the *female* the foramen was *oval*, and that in the *male* it was *triangular*, although there was no statement upon the subject in the old edition of Wistar's Anatomy which he had examined, nor in the more recent edition known as Pancoast's Wistar. Dr. Horner also stated, in his work, that "in the male it is triangular, in the female, rather oval." On the other hand, Meckel, Cloquet, Cruvielhier, Harrison, and Quain and Sharpey make a statement precisely the reverse of this.

The lecturers upon obstetrics with whom he had conversed, either teach the former view, or are silent upon the subject. Denman, Baudeloque, and Maygrier say nothing. Neither do Monroe or Cheselden, both high authority on the bones, nor Winslow, Bell, Bartholin, &c., &c.

Sœmmerring says "the foramen is elliptical in children, and triangular in adults." Wilson and Von Behr say it is triangular in women.

In order to satisfy his own mind on the subject, Dr. Neill had, up to this period, examined thirty-two skeletons, and the result was so contrary to the view which he, and perhaps most of the Fellows had been taught, that he had thought it worth while to prepare a chart, exhibiting diagrams of the male innominata in one column, and those of the female in another, to show at a glance, the distinctive difference.

He believed from an inspection of this, every one would be convinced that the foramen in the *male* is *oval*, while in the *female*, it is *triangular.*

It will also be observed that the male foramen is longer and narrower, and that the line representing the long axis is more vertical, and nearly parallel to the rami of the pubes and ischium; whereas, in the female the foramen is not only smaller and triangular, but that the apex of the triangle is downward, that its internal side is nearly parallel to the rami of the ischium and pubes; and that the base of the triangle is proportional to the chord of the arch of the pubes.

He remarked that the establishment of this fact, by investigation or by authority, would not interest the Fellows of the College in a practical point of view, its only value consisting in its afford-

ing another mark of distinction between the male and female skeletons.

Dr. Atlee read a letter which he had received, giving an account of seventeen persons who had been attacked with vomiting, purging, and other symptoms of poisoning, after partaking of floating island, flavoured with brandy in which peach kernels had been infused.

The College proceeded to the consideration of the amendment to the Ordinances proposed at the last meeting, which, after being amended so as to read as follows, "when if four-fifths of the Fellows present vote in favor of the candidate, he shall be declared duly elected;" was adopted.

Dr. C. D. Meigs presented some remarks on Nervous Disorders.

Stated Meeting, July 2d, 1850.

Dr. Meigs, Vice President, in the chair.

Present, thirteen members.

The following works were presented to the Library:

By Dr. Hays:

Verhältniss des Organischen zum Anorganischen, oder Grundlinien der Vergleichenden Physiologie und Physik. Von M. C. Wolfring, M. D.

Verslag over de Cliniek voor Inwendigie Ziekten, gegeven bij de Clinische School te Rotterdam, gedurende den cursus, van 1 Sept., 1846, tot 19 Junij, 1847. Door G. Ph. F. Groshans, M. D.

By Dr. Parrish:

Transactions of the Medical Society of the State of New York during its Annual Session of 1850.

By Dr. Bell:

A Treatise on Baths; including Cold, Sea, Warm, Hot, Vapour, Gas, and Mud Baths; also, on the Watery Regimen, Hydropathy, and Pulmonary Inhalations; with a description of Bathing in Ancient and Modern times. By John Bell, M. D., etc., etc.

The College, in obedience to the provisions of its Charter, proceeded to an Election for Officers, to serve for the ensuing twelve months, when the following were elected:

President,

GEORGE B. WOOD, M. D.

Vice President,

CHARLES D. MEIGS, M. D.

Censors,

HENRY BOND, M. D.,
J. WILSON MOORE, M. D,
SAMUEL JACKSON, M. D.,
GEORGE W. NORRIS, M. D.

Secretary,

D. FRANCIS CONDIE, M. D.

Treasurer,

J. RODMAN PAUL, M. D.

Curator,

JOHN NEILL, M. D.

Dr. BRIDGES presented the draught of a Memorial addressed to the Honorable Wm. M. Meredith, Secretary of the United States Treasury, in relation to the present Inspector of Drugs for the Port of Philadelphia; as adopted by the Philadelphia College of Pharmacy.

On motion, it was *Resolved*, that the draught be referred to a committee of three Fellows, to report at the next meeting what action it is proper and expedient for this College to take in relation to the same.

Drs. CONDIE, PARRISH, and CARSON were appointed the committee under this resolution, and on motion, were empowered to fill up any vacancy that shall occur in their number.

Dr. PEPPER read the following account of a case of CHRONIC HYDROCEPHALUS:

A male child, aged five months, was brought to my office, May 9, 1849, suffering with dropsy of the brain. The mother, a young married woman, had always enjoyed good health up to about three months before her confinement, when she met with a severe fall, which required her to be under medical attendance for several weeks. In due time she was confined, and had a perfectly natural labour; the child, at the time of birth, was apparently

perfectly healthy, and its head was of the usual size. Three days after birth, however, the child commenced screaming, and so continued, with but short intermissions, for one month. From the end of the first month, convulsions set in, there being several fits every day, and these continued to occur during the entire second month; up to this time the child had also suffered with more or less fever. About the beginning of the third month the head was observed to be somewhat enlarged, and it continued gradually to increase, up to the time when the child was first brought to my office. The mother also stated, that calomel, blisters, and various other remedies had been tried in his case, but without any apparent benefit.

The child was evidently blind, and lay with the eyes half open, the balls being in constant motion; the pupils were natural in size and sensitive to light. He appeared to be well developed, and could suck without difficulty; he, however, was exceedingly irritable, and continued to suffer with severe spasms, and at such times screamed violently. The bowels were perfectly regular, and the secretion of urine quite abundant; nor could any thing like paralysis of the limbs be detected. Gently tapping the head gave rise to distinct fluctuation, as in cases of ordinary ascites; but no abnormal murmur, or agophonic resonance of the voice could be detected by the most careful auscultation. The veins of the scalp were greatly distended, and in fact, the whole physiognomy of the child was perfectly characteristic of the disease.

By careful mensuration I found the head to measure, in circumference, 23 inches; from ear to ear, over vertex, 13 inches; from nasal notch of os frontis to the base of the skull, over vertex, 13 inches; from superior edge of one parietal bone to the other, 6 inches; and from the upper margin of os frontis to os occipitis, full 8 inches.

The child did not again come under my observation until the second day of June, 1850, or more than one year from the time I was first consulted in the case. It was now about seventeen months old, and had attained a fair development for a child of that age; it was still perfectly blind, but appeared to have sufficient intelligence to recognise its mother's voice. The head had become enormously distended, and the spasms were more violent and frequent; but the child still appeared to have full use of its limbs; and judging from the violence of its screams, it could not be considered as very feeble. At this time the head presented the following dimensions:—circumference, 27½ inches; ear to ear, 18½ inches; from nasal notch to base of skull, 21 inches; from parietal to parietal bone, 8 inches; and from summit of os frontis to os occipitis, 9½ inches; so that by comparing these with the former admeasurements, it will be perceived that the following increase in the dimensions had taken place in a little

more than one year:--in circumference, 4½ inches; ear to ear, 5¼ inches; nasal notch to base of skull, 8 inches; parietal to parietal bone, 2 inches; and from os frontis to os occipitis, 1½ inches; showing the greatest increase in an antero-posterior direction, and thus causing the forehead to overhang the face to a very considerable degree.

The child was brought to the Pennsylvania Hospital, June 4th, with the express view of having the operation of paracentesis performed. A candid exposition having been made to the mother, of the numerous risks attendant upon such a procedure, and at the same time, of the very slight prospect of a favourable result, she was still anxious that it should be performed, in the hope that at least some temporary relief to the child's sufferings might thus be obtained.

The operation was performed by Dr. Peace, June 6th. A small silver canula armed with a grooved trocar, was introduced about one inch to the right of the longitudinal sinus, and half an inch from the superior margin of the os frontis. The removal of the trocar was followed by a jet of limpid serum, which continued to flow until about twenty ounces had been removed. During the operation moderate pressure was maintained by the hands of the assistants, and after the withdrawal of the fluid, permanent compression was kept up by broad strips of adhesive plaster, so applied as to completely envelope the head. The puncture was dressed with a pledget of dry lint, lightly secured by a strip of adhesive plaster. Soon after the operation the pulse appeared good, and the child took the breast with avidity; and in fact, no untoward symptom occurred up to June 10th, or fourth day after the operation; up to this time a considerable amount of serum continued to flow from the puncture; but it was now observed, that the child was more restless, with increased heat of the head, and more injection of the conjunctiva. The grinding of the teeth, and the spasmodic closure of the hands, to which it had been subject for many months, were now greatly increased; and at the same time it was noticed that the head had become more tense. Towels wet with cold water were constantly applied to the head, and small portions of calomel and Dover's powder were directed; but on the morning of the 11th, I found that the child could not suck, and that it swallowed with great difficulty, so that only one of the calomel powders had been administered. On the 12th, the head was flaccid; no pulse could be felt at the wrist, and the child was evidently moribund. He expired the same evening, about six days after the operation.

The examination was made the following day, in the presence of Dr. J. F. Meigs and Dr. Levick. With the view of ascertaining the exact amount of fluid, the brain was punctured at its most dependent part, near the os occipitis, and about three pints of

straw coloured serum escaped from the orifice. The scalp was now dissected from the dura mater, and, finally, this membrane was carefully opened, so as not to injure the subjacent brain; upon inspection, however, it was ascertained that the brain, owing to the removal of a part of the fluid which had distended the ventricles, had receded from the dura mater, and was in a measure collapsed. Upon opening the hemispheres, they were found to be converted into mere sacs, the parieties of which in many parts were not more than one line in thickness, and so softened, as to be lacerated by the slightest traction. About four pints of turbid serum still remained in the dilated ventricles; which, together with the three pints removed by puncture before commencing the dissection, and the one pint and four ounces removed at the time of operation, make in all eight pints and four ounces.

The septum lucidum was exceedingly thin and lacerated, so as to allow a direct communication between the two ventricles; the laceration may however have occurred during the examination; and this is by no means improbable, when we remember the jelly-like consistence of the brain. The foramen of Monro was greatly dilated, so as to admit the end of the finger, and the fluid could thus readily have passed from one ventricle to the other, even had the septum remained imperforate during the life of the patient. The lining membrane of the ventricles was exceedingly thin and soft, and coated with a thin layer of grey puriform matter; a small yellow mass, about the size of a pin's head, adhered to the side of the right ventricle, and several similar bodies were found on the floor of the left ventricle, near its anterior part. The plexus choroides was very pallid, and the longitudinal sinus contained but little blood. The distinction between the cortical and medullary matter appeared to be entirely lost over those portions of the hemispheres where the distension was greatest; but at the posterior parts, where the parieties were nearly one-third of an inch thick, the difference between the grey and white matter was quite apparent. The corpus striatum and thalamus opticus of the right side appeared to be well developed and perfectly natural, whilst on the opposite side, scarcely the rudiments of these bodies could be detected.

The pia mater throughout adhered firmly to the brain, and the convolutions of the hemispheres were almost entirely obliterated. The cerebellum, pons variola, medulla oblongata, and other portions of the base of the brain, were apparently healthy; though perhaps the cerebellum was somewhat softer than what is natural, even for early infancy. The commissure of the optic nerves was completely imbedded in soft lymph and puriform matter; and the same was true with regard to the other cerebral nerves, but to a much less extent.

Several points of ossification could be seen on the os frontis,

and the orbital plates were forced down, diminishing the size of the orbits, and causing the eyes to protrude. The parietal bones were very thin and elastic, and at their free margins were, in fact, almost in a cartilaginous condition. The lungs and other organs could not be examined.

In making this communication to the College, I am fully aware that the case does not materially differ from numerous others on record. In our own city, at least, it is an exceedingly rare affection, and I have therefore thought it might prove interesting.

The first question of interest which presents itself in the present instance, has reference to the congenital or acquired nature of the disease. Acute or chronic inflammation, the result of tubercle, or other mechanical cause, does occasionally give rise to effusion into the ventricles; yet it is hardly conceivable, that under such circumstances, life could be sufficiently prolonged, to admit of any very considerable distension of the head, as in the above case. When we bear in mind, that the mother, during her pregnancy, received a severe blow over the abdomen, it is not improbable that the fœtus may at the same time have sustained some injury, which ultimately gave rise to an increased effusion into the ventricles, and thus prevented the full development of the brain, as seen by the deficiency of the corpus striatum, and thalamus opticus of the right side. The mere facts, that at time of birth the head was of natural size and perfectly well formed, and that the infant appeared well until several days after, are not to be received as conclusive proofs, against the probability of any considerable amount of disease having existed prior to birth. The screaming and other symptoms of cerebral irritation, which so soon supervened, may be fairly ascribed to an increased irritation of the brain, induced by the numerous exciting causes to which the child was necessarily exposed after entering upon its new state of things.

The small yellow mass found on the side of the left, and on the floor of the right ventricle, bore some resemblance to tubercular matter; but it was exceedingly small in quantity, and may have been nothing but concrete pus. At all events, no granular tubercles were detected at the base of the brain, fissure of sylvius, or other localities where such deposits are most commonly found. It should also be stated, that both parents enjoyed good health, and were without any hereditary tendency to tubercular disease. Moreover, the labour was easy, and in all respects perfectly natural; so that the symptoms could not be ascribed to any injury sustained by the head during parturition. It has long been observed that illegitimate children are most liable to hydrocephalus; and it has been supposed that the tight lacing resorted to in such cases for concealment, might form a sufficient cause for the imperfect development of the brain, which so frequently exists in

this disease. But no such conditions pertained to the case under consideration; and we are therefore disposed to believe, not only that the disease was congenital, but that it was most probably induced by the injury received during pregnancy.

It is not always an easy matter to discriminate between internal and external hydrocephalus; and this difficulty was felt in the present case. When the effusion is into the ventricles, constituting hydrocephalus internus, it is most commonly congenital, and owing to a gradual increase of the fluid which naturally occupies the ventricles during fœtal life. The degree of development which the head sometimes undergoes under these circumstances, is truly wonderful. In the Dictionnaire de Medicine, allusion is made to a case reported by Willan, in which, at the age of two years, the circumference of the head measured fully 29 inches, whilst from ear to ear, over the vertex, it was not less than 19 inches. Meckel mentions the case of a fœtal head aged seven months, the transverse diameter of which was 16 inches.

On the other hand, in hydrocephalus externus, or when the effusion is into the sac of the arachnoid, the head seldom, if ever, attains the same degree of development; and it is this fact which best enables us to make a correct diagnosis as to the exact locality of the effusion. The distinction is an important one, since more may be hoped for from the operation of paracentesis in external hydrocephalus, than in the other variety. In doubtful cases, we may sometimes be greatly aided in our diagnosis, by carefully investigating the probable cause of the effusion; thus, while the internal form is generally owing to a mere arrest of development, or perverted nutrition, the external variety can very frequently be traced to blows inflicted during pregnancy, or after the birth of the child, or to the pressure resulting from laborious parturition. According to M. M. Rilliet and Barthez, hemorrhage into the arachnoid is not an unfreqnent cause of external hydrocephalus. Tubercles may give rise to either variety; but under these circumstances the head seldom attains any very considerable size.

The next and perhaps the most important question in connection with this case, is whether the condition of the patient justified the operation. We are well aware of the fact, that by many this operation is considered as cruel and unjustifiable under any circumstances; nor can it be doubted that most of the reported successful cases are exceedingly unsatisfactory, owing to the very imperfect manner in which they have been narrated.

In the London Medical Gazette, vol. ii, for 1841–42, there is a very able and elaborate report upon this subject by Dr. Charles West, in which he clearly shows that out of the sixty-three cases of this operation, which he has carefully collected from different authors, not more than two out of seven terminated favourably. But by a rigid analysis of these cases, it is rendered highly proba-

ble that even this degree of success is far beyond a fair estimate. It is well known to the profession, that Dr. Conquest has reported ten successful cases out of nineteen operations for this disease, but here again it is to be regretted that there is the same deficiency of detail as to the exact condition of the patients, and the particular circumstances under which the operations were performed. We cannot, therefore, receive such evidence as conclusive proof of the comparative safety of the operation.

When the effusion has commenced at a very early period of fœtal life, the development of the brain must be more or less impeded, and it is therefore hardly probable that with such an imperfect organization of the nervous centre, life could be long protracted, even supposing that the enlarged head could be safely delivered. Much less would it be possible for such a being to be susceptible of any considerable degree of intellectual development. And yet it is well known that children born with copious effusion into the ventricles have lived for many years, and even attained a fair degree of mental development, notwithstanding the great and gradual increase in the size of the head. In such cases the probabilities are, that the effusion only commenced at a late period of fœtal life, and when the brain had already attained a more perfect organization; the effusion then must also have been very gradual, so as to cause the hemispheres to be slowly unfolded, and thus prevent any injurious pressure upon the brain. Such most probably was the condition of the brain in the case alluded to by Dr. C. West, where, with a tolerable amount of bodily and mental activity, life was prolonged for twenty-nine years. Goelis mentions an instance, where life was protracted even to the advanced age of seventy-nine years.

From the above statements, it is evident that the mere existence of hydrocephalus is no certain proof that idiocy and premature death must be the inevitable result; and it is therefore fair to conclude that, when the functions of the brain are not materially impaired, it would not be justifiable to resort to a dangerous operation, with the mere view of relieving the patient from the inconvenience attendant upon the increased weight of the head. When the functions are very seriously impaired, owing either to an arrest of development, or disorganization of the brain from a rapid effusion, nothing but temporary relief can be anticipated from the withdrawal of the fluid.

In the present case, it is true that the body was well developed; and that the child had a certain degree of intelligence, is quite manifest from the fact of its recognising its mother's voice; moreover, it could suck and cry vigorously, and apparently had free use of its limbs. But it should also be remembered that the child was blind, that it suffered with constant and painful spasms, and above all, that the head was rapidly increasing in despite of the

usual means of treatment recommended in such cases. The imperfect development of the brain, together with the general ramollissement of the cerebral mass, renders it highly probable that the child could not have survived long, even had the operation not been performed.

The quantity of fluid drawn off was barely sufficient to remove the distension: and it is well known that this operation has been repeatedly performed on the same subject, and under similar circumstances, not only without any immediate bad effects, but even with decided relief of all the most distressing symptoms.

Although the great development of the head rendered it highly probable that the effusion was into the ventricles, yet the previous history of the case left some hope that it might have been into the sac of the arachnoid, and that, under these circumstances, the operation would not only afford temporary relief, but even be followed by a permanent cure.

Dr. Parrish stated that within the past three months, he had met with three cases of complete, though temporary, loss of voice, occurring under circumstances so peculiar, as to render them worthy of record.

The first case was that of a young man residing in Camden, N. J., who was seen by Dr. P. in consultation with Dr. Cooper of that place. This patient was about nineteen years of age, tall, and of rapid growth, and of a highly nervous temperament. He had been subject, for some months prior to his attack, to epistaxis, preceded by head ache, and coming on after a fast walk, on entering a heated room, &c.

In 4th month, (April) last, the young man's father was taken very ill, which caused him much anxiety; he lost several night's sleep in watching over his sick parent, during which time he had eaten but little, and was in constant apprehension of his father's death. A few hours prior to this event, he commenced weeping aloud, and on being checked by some of the family, he immediately left the room, and went into another apartment, where he was seized with a violent hysterical convulsion.

Dr. Cooper was sent for, and found him lying on the floor, perfectly insensible; on becoming conscious he complained of his head, and of a severe pain in the left side, over the heart, which continued most of the time for several days. Several of these convulsive attacks occurred during the day, in one of which Dr. Parrish saw him.

The muscular contractions were very violent, with episthotonos and tearing of the hair, requiring several persons to restrain his movements.

During the intervals he was conscious, but unable to articulate, communicating his ideas by gesticulations and indistinct mutter-

ings. After he had been conscious for several days, it was thought proper to communicate to him the fact of his father's death; this, though done in an indirect manner, brought on a most violent convulsion, which continued for more than half an hour, requiring the united strength of several men to hold him.

On recovering from this he was totally unable to articulate, or indeed, to raise a sound, although his mind appeared perfectly clear, and his expression was natural.

After several days he attempted to communicate his thoughts by writing, but was unable to connect sentences, having first to practice upon single letters. At the end of nine days he was able to write out his ideas intelligently, and on the 12th day his voice *suddenly* returned soon after awaking in the morning.

Since his recovery, he has described the sensation under which he labored, as though something were in his throat, preventing the use of the tongue, the will having no apparent power over it.

Since this attack the young man has suffered from a slight convulsive seizure, without any of the severe symptoms which marked the first attack; with the exception of this, he has enjoyed his accustomed health.

The next case was that of a young unmarried female, who had suffered a number of hysterical attacks dependent upon disordered menstruation. She was subject to pain in the left side, palpitation of the heart, and other nervous symptoms.

During a recent monthly period, the symptoms were so severe as to bring on a hysterical convulsion, succeeded by paralysis of the limbs of one side, and complete loss of voice.

For several days after the return of consciousness she was unable to move the right arm or leg, although she distinctly apprehended the wishes of those around her that she should do so, and would make the attempt. At the end of three or four days the power of motion returned, but she was still totally unable to speak, although she could communicate her wishes by signs. In about a week from the attack the voice also returned suddenly, and she has since been well.

The next case was more extraordinary. A lad of sixteen years of age, in good health, and not considered nervous, was attacked with hoarseness and slight sore throat, after a check of perspiration brought on by violent exercise of a hot evening. During the first day he could scarcely speak above a whisper, but it was only regarded as a common sore throat, and he went to school as usual. On the second day his voice was so far gone that the teacher sent him home, and he retired to his room to rest. On awaking from a nap, he felt as though something gave way in his throat, and he was from that time unable to speak.

On the next day Dr. P. saw him, his voice was now entirely gone, and though he made repeated attempts, at my urgent request to

cry out, he was totally unable to produce a sound. There was no inflammation of the throat to be perceived; he had no fever; his expression was good, pulse natural, appetite and sleep as usual; the only uneasiness of which he complained, was a sense of tightness across the chest. A strong solution of nitrate of silver was applied to the fauces, and powerful sternutatories and the shower bath were recommended. Dr. P. at the same time expressing a confident opinion that the voice would return. This state of things continued for eighteen days, the boy all the while using a slate to converse with; his hearing was not impaired, and his mind was as clear and active as usual.

One afternoon while bathing he made a plunge into the water, whereby he got some water down his throat, which caused him to struggle for breath, in which effort he cried out aloud. On attempting to speak he found he could make a noise, and immediately spoke to his companions. He soon dressed himself, and ran home with delight, to tell the news. For a few days he stammered in his speech, but this gradually wore off, and he now talks with his usual fluency.

In these cases there was no apparent inflammation or lesion about the organs of the voice, or any defect in the movements of the parts concerned in the act of speaking; there was no want of ideas, nor of the power of communicating them by signs or writing, but a simple want of power to execute the commands of the will. So far as Dr. P. could judge, medical treatment had no influence in restoring the voice, unless the strong excitement and efforts to which the last patient was subjected while in the water, may be viewed in the light of a remedial measure. The cases are chiefly interesting, as illustrative of that mysterious power which operates through the nervous system, and without the presence of which, even our volition fails to execute its office.

Dr. Norris' Case.

List of Specimens presented to the Pathological Cabinet:

No. 32. Section of Kidney, affected with Bright's disease.
Presented by Dr. Hays.

No. 33. A wax cast of the external genitals of an Hermaphrodite.
Presented by Dr. H. H. Smith.

No. 34. A Fibrous Tumour removed from the lobe of the ear.
Presented by Dr. Norris.

The tumour weighs 4 ounces and 7 drachms. It measures 5¼ inches in length, 4½ in breadth, and 2½ in thickness. A section through the middle shows it to be a white fibrous structure, somewhat more dense in some parts than in others. Upon examination with the microscope, it was found to consist principally of the tissues composing the true skin, white and yellow fibrous tissues; these were blended in different proportions in different parts. The hardest and most cartilaginous parts were composed of the white fibrous tissue. The softer and more flexible parts were formed of the yellow or elastic fibrous tissue. In the interstices of the fibres there was some granular matter. It contained no fat. The cuticle presented nothing unusual in its anatomical character.

Dr. Norris read the following account of the case, and presented the accompanying lithograph.

Ruth Tucker, a large and healthy negro woman, aged twenty-four, was admitted into the Pennsylvania Hospital in January last, on account of tumours developed in the lobe of each ear. She stated that between five and six years before, she had her ears pierced, and that soon afterwards brass rings were inserted into them. These she wore for about a month, when the punctures, which had been from the first irritated by the metal, became so sore that the rings were removed. Some swelling had already shown itself around the punctures before they were taken out, and this increased in both ears, and gave origin to the tumours, which had continued since slowly to enlarge.

These tumours were heavy, and appeared to the feel to be lobulated, and almost cartilaginous; they were not painful when handled; the skin covering them was perfectly healthy, and except on account of the weight and size of the larger one, she experienced no inconvenience from them. The left one was much the largest of the two, and fully equalled in size a turkey's egg. The right had attained about half that bulk. Both were attached by a pedicle of some extent to the lower part of the ear and integuments below that organ. On the 19th, I removed the tumour from the right side, after which cicatrization took place kindly, though very slowly. The skin at the incised part was unsually vascular,

and I observed before the healing process was complete, that the cicatrix had become slightly elevated and hard, as if there was about to be a renewal of the growth. She left the Hospital on the 3rd of May, having been retained on account of some ulceration of the arm, the result of a burn. This, which had been deep, and was followed by a slough, it may be interesting to observe, left a perfectly healthy cicatrix, but on the lower part of her neck and breast I discovered two or three *small* but long elevations of the skin, very similar to the appearance of the cicatrix following the incision which I had made for the removal of the tumour from the ear, which she stated to me had appeared after a scald which she had received in childhood.

In connection with this case I may observe, that I have twice previously removed similar tumours from the ear at the hospital; once in April, 1847, in a woman aged fifty, where the tumour was of four years growth, and had reached the size of a bantum's egg, but affecting only one side; and on another occasion, in March, 1848, in a younger woman, where the tumours were of the dimensions of ordinary hickory nuts, and occupied both ears. Both of the patients were blacks in good health, and in both, the growths had followed perforation of the ears for the introduction of rings: and in the one last mentioned, there was decided evidence of a return of the affection, when I last saw the patient, some months after the operation. Examination of these tumours presented appearances precisely similar to that which has just been given.

In one of our old hospital case books, I find that a similar disease has been before noticed there. The patient was in this instance, too, a black woman, who discovered soon after her ears were perforated, a kind of pimple at each of the orifices. The two of these on the right ear, and the posterior one on the left, are described as having grown to tumours of the width of an inch with narrow necks. They were excised by Dr. Parrish, in 1817. It is stated that the healing of the wound consequent on the operation was slow, and that on dissection, the tumours presented a cartilaginous appearance.

The tumours in all of the above instances, though varying very much in size, were of the same character, and seemed to be true productions from the cutis. The first appearance of the disease is a simple hard elevation of the skin, very similar to the raised cicatrices which are sometimes seen to follow burns, and is unaccompanied by any heat, pain, or glandular enlargement. In two of the three instances in which I removed the tumours, there was a commencement of reproduction of the disease soon afterwards, though the incisions in all of them were made beyond the thickened structure. All of the patients were free from any constitutional vice. From having observed the above three cases of this

affection within as many years, all arising from the same cause, situated in the same part, and occurring in the same race, and having never met with any mention of similar observations in the course of my reading, I have thought that along with the specimen which I last removed, and the minute account of the dissection which has been furnished of it by our Curator, that a brief description of the cases might prove of interest to some members of the College.

The only disease which it at all resembles, is that which was first described by Alibert, as keloides; whether or not the above cases belong to that rare affection, I must leave others to determine.

No. 35. *A Fœtal Kidney of the left side, greatly distended by urine.* Presented by Dr. Hunt.

Measuring 7 inches in length, and 5 in breadth. It was obtained from a still-born child, delivered at full period by the forceps. The ureter was imperfect on this side, being cord-like in its entire length. Neither testicle had descended.

No. 36. *Melanosis of the Lung.* Presented by Dr. Bond.

No. 37. *Melanosis of the Liver.* Presented by Dr. Bond.

No. 38. *Cancer of the Stomach.* Dr. Parrish's Collection. Presented by Dr. Isaac Parrish.

No. 39. *Comminuted fracture of the Radius, involving its carpal articular surface.* Presented by Dr. Bond.

No. 40. *Cast of the Head of Moran*, who was hung for murder on the high seas. Presented by Dr. Betton.

No. 41. *Lacerated wound of the Dura Mater.* Dr. Parrish's Collection. Presented by Dr. Isaac Parrish.

John Neill, *Curator.*

SUMMARY

OF THE

TRANSACTIONS OF THE

COLLEGE OF PHYSICIANS

OF PHILADELPHIA.

FROM AUGUST 7, TO OCTOBER 1, 1850, INCLUSIVE.

Stated Meeting, August 7th, 1850.

Dr. MEIGS, Vice President, in the chair.

Present, seventeen members.

The Librarian acknowledged the receipt of The Minutes of the Proceedings of the South Carolina Medical Association, at its Annual Meetings, February, 1849, and 1850.

Dr. HAYS presented to the Library the following works:

Medicinal bericht des königl. Preuss. medicinal Collegiums der Provinz Sachsen fur das Jahre 1830. Zusammengestellt von Dr. August Andreæ. Magdeburg, 1831.

Das Hamburgische Collegium medicum im der Aerztliche Verein in Hamburg. Von N. F. Schrader, M. D. Hamburg, 1840.

Cholera, its causes, symptoms, and treatment, by J. P. Batchelder, M. D. New York, 1849.

Arzneiapparat zur behandlung der Gicht und kurart ihrer verschiedenen formen. Von A. Beyer. Breslau, 1842.

Die Haut in Gesunden und Kranken zustande, oder das wesen der haut Krankheiten und deren heilung, von Dr. Max. Jaffe.—Hamburg, 1846.

Die Gallige Dyscrasie mit acuter gelber atrophie der Leber, von Dr. Paul Jos. Horaczek. Wien 1843.

Handbuch der Allgemeinen und Speciellen Chirurgie, von Dr. A. Wernher. Giessen, 1846.

Transactions of the Medico-Physical Society of Bombay, 1847, 1848. Bombay, 1849.

Technik der Medinischen Diagnostik, von Dr. A. Siebert. Erlangen, 1843.

Die Pathologish anatomischen Verhaltnisse des pneumothorax, von J. Julius Hotte.

Ueber die Exarticulation des Unterschenkels im Kniegelenk, von Christian Meyer.

Bericht über die Ergebnisse des therapeutisch-Klinischen unterrichtz under Kaiserlichen Mediko-chirurgischen Akademie zu St. Petersburg, warend des Lehrjahres 1839–1840, von Dr. Seidlitz. St. Petersburg, 1841.

Gedrängte darstellung der vorzüglichsten Heilquellen Europa's nach ihrer natürlichen und chemischen beschaffenheit und ihrer wirksamkeit fur Aerzte und Naturforscher. 1842.

Beobachtungen über Karlsbad und seine heilwirkung, von Joseph Wagner, M. D.

Gefängnissreform in Frankreich.

Beitrage zur Medizin, Chirurgie, und Opthalmalogie, von Chr. Conr. Wuth. 1844.

Clinical Lectures on Surgery, delivered at St. George's Hospital. By Sir Benjamin C. Brodie, Bart. V. P. R. S., etc. 1846.

Conspectus Morborum Auris humanæ, Auctore Julius Lobethal. Berlin, 1833.

Nonnula de Morbis Unguium. Auctore Ludovicus Benjamin. Berlin, 1848.

De Viribus et Rationibus majorem dosium calomellis. Auctore C. J. Æmil. Hornemann. Haunia, 1839.

Beitrag zur Geschichte der Manie ohne Delerium, von Dr. Johann Wilhelm Heinrich Conradi. Göttingen, 1835.

Descriptions of the Inferior Maxillary bones of Mastodons in the cabinet of the American Philosophical Society, with remarks on the Genus Tetracaulodon, etc. By Isaac Hays, 1833.

Together with a number of medical pamphlets and periodicals.

The Committee on Publication reported that they had issued the *Second* number, Volume III, of the Summary of Transactions.

The Committee on Memorial in regard to Inspector of Drugs reported progress, and were continued.

Dr. C. D. Meigs made some remarks on the state of sophistication, in which the *lac sulphuris* is frequently met with in the shops.

The Doctor stated that he had, for a long time, been accustomed to employ lac sulphuris, as much as would lie on the handle of a teaspoon, say from four to five grains, mixed with honey and water, as a prescription in the cases of costiveness occurring in infants. Given daily, he had found it to act as an effectual aperient; and in a short time, has known its use to overcome, entirely, the costive habit. Recently, however, he had been much disappointed in the effects of the lac sulphuris in such cases, and upon instituting an inquiry into the cause of this disappointment, he has ascertained that it is in consequence of the lac sulphuris of the shops containing but one-half of pure sulphur, the remainder being sulphate of lime. This sophistication may be readily detected by the application of heat, when a black incombustible mass will be found to remain.

Dr. Huston considered that, from the fact of the ordinary method for preparing the lac sulphuris, producing, always, a precipitate of sulphate of lime, the washed sulphur is a far preferable article for internal use.

Dr. Bridges remarked that the ordinary lac sulphuris of the shops contains but 40 per cent. of pure sulphur. If a pinch of it be taken between the fingers, it will be found to have a soft feel, like that communicated by an impalpable powder, whereas pure lac sulphuris will have a gritty feel. The sophisticated article is also of a white colour, while the pure article is of a cream, or even dirty yellow colour.

Dr. Pepper called the attention of the College to the subject of the Pathology and treatment of the affection known as *coup de solèil,* or stroke of the sun, as one upon which there appears to exist very loose and erroneous notions. In looking over the Hospital records, he found that within the last seven years, twenty patients had been treated, in the institution, for stroke of the sun; of these, *ten* died, *seven* recovered, and *three* became affected with a chronic affection of the brain, eventuating in insanity. These patients had all been bled before admission.

The prominent symptoms of the disease, are violent convulsions, with a thready, irregular, and sometimes scarcely perceptible pulse, and dilated pupil. In the intervals of the convulsions, the patient is often affected with muscular tremors, like those of paralysis agitans. The surface is rather cool than hot. Dr. Pepper had recently witnessed four post-mortem examinations of patients who had perished from stroke of the sun. The brain exhibited no indications of congestion, nothing, in fact, of an unusual appearance. Dr. P. was, however, struck with the appearance of the heart. In all of the four subjects it was pallid, flaccid, and soft-

ened, while the other muscles of the body were florid and firm. The lining membrane of the heart, and of the large blood vessels was of a very dark, almost purple colour. The cavities of the heart contained but little blood, and no coagulum. Louis describes similar post-mortem appearances, as occurring in rapidly fatal cases of typhoid fever. The examinations referred to by Dr. P. were made from six to eight hours after death. The softening of the heart and discoloration of the lining membrane were not the effects of commencing decomposition; they were, evidently, the results of disease.

By many, the symptoms produced by exposure to intense heat, are supposed to be the result of congestion of the brain. Apoplexy may unquestionably result from insolation, but the cases we usually meet with during the intense heat of our summers, present no symptoms similar to those which result from cerebral congestion, and demand for their cure stimulants instead of bleeding.

In all of the cases seen by Dr. P., which terminated fatally, death took place in six hours. In those who survived, recovery was very slow; the mind continued for some time very much confused; some became insane; one became affected with partial paralysis, and one with amaurosis.

Stroke of the sun generally occurs in persons engaged in some laborious occupation, when exposed, for the most part, to the direct rays of the sun. By the combined effects of violent muscular exertions and the heat of the atmosphere, the heart is stimulated to a degree of morbid activity, copious perspiration flows from every part of the surface of the body, fatigue speedily ensues, and the heart exhausted by its morbid activity, causes a passive congestion of the capillaries to take place throughout the body. The disease is evidently one of nervous exhaustion. The cases of apoplexy and congestion of the brain occasionally produced by insolation, should be carefully distinguished from the cases above alluded to, the pathology and treatment of the two being very different.

In five cases which fell under the notice of Dr. Pepper, all of which were treated by stimulants.—ammonia and brandy internally, when the patient could swallow, and stimulating injections, when this was not the case,—three recovered, and two died. Dr. P. considered it a remarkable circumstance, that this affection has received so little attention on the part of medical writers. In consulting the standard authorities, we find but little said in reference to it, and that little generally vague and unsatisfactory. Dr. P. brought it forward now, that it may elicit from the Fellows of the College, the attention it would appear to merit.

By some it has been supposed that coup de soléil is the result of a sudden change, produced by the action of the sun's rays in

the blood; the absence of organic lesions, and the fluid condition of the blood, have, no doubt, led to this belief.

Dr. Condie remarked that he recognised the cases described by Dr. Pepper, as of common occurrence during every summer of unusual warmth. They are ordinarily met with among those whose labours are carried on in the open air, without shelter from the heat of the sun. He believed, also, that they occurred most commonly in those labourers who are addicted to the intemperate use of intoxicating drinks. That in these cases, the morbid phenomena are the result of exhaustion, he has never had any doubt, and cannot conceive upon what principle, bleeding and other depleting remedies have been resorted to in their treatment. When called to such a case, he has invariably directed cold to be applied to the head, sinapisms or stimulating frictions to the extremities, stimulating injections into the rectum, and so soon as the patient is able to swallow, stimulants internally. But there are another class of cases produced by exposure to the direct rays of the sun, of a very different character. In these the head particularly, and often the entire surface, is intensely hot, the eyes are injected, and the pupils contracted; the pulse is small, quick, and corded, and the tongue red and dry. The patients are delirious, morose or restless, and in a constant state of agitation. If this condition of things be not subdued by appropriate and active treatment, a state of coma ensues, and the patient dies, as in cases of acute meningeal inflammation. That these cases are dependent upon acute meningitis, Dr. C. has convinced himself by an examination of the brain after death. In this form of sun stroke, active depletion, by the lancet, is demanded; stimulants internally administered, would but aggravate the symptoms, and accelerate the fatal result.

He believes the cases described by Dr. P. to be produced by the exhausting effects of active bodily labour carried on in an over-heated atmosphere. He recollects that in the winter of 1818–19, he was called to a coloured preacher, of one of the methodist churches in the southern part of the city, who, during the severe bodily exertions, and loud and prolonged exhortations which constitute the religious exercises of these people, carried on in an over-heated, crowded, and confined room, was suddenly seized with convulsions, alternating with almost constant nervous tremors; his pupils were dilated, his countenance was slightly flushed but relaxed, his pulse was feeble and thread-like, and his surface cool and clammy. By stimulating frictions to his surface, and the cautious use of stimulants internally, his convulsions were soon quieted, and his pulse increased in volume and strength; but he lay for two or three days in a languid and almost insensible state, from which he very slowly recovered; and, for many weeks afterwards, upon any undue exertion or excitement, he was liable to fall back into the same

condition. In this case the disease was produced by the exhausting effects of undue exertion in a heated and confined atmosphere; and he believed that in those who are attacked whilst labouring in the open air, during the intense heat of summer, it is also produced by exhaustion, and not by any direct influence of the sun's rays, as some have supposed. That the direct influence of intense solar heat may produce congestion of the brain and apoplexy, Dr. Pepper admits, and Dr. C. has known it to produce, also, well marked acute meningitis. A gentleman about to leave the city by steamboat, was detained, in conversation with a friend, until near the hour of the boat's departure. Hurrying along at mid-day, exposed to the rays of a July sun, lest the boat, with his baggage on board, should leave him, he fell down in the street in convulsions. The convulsions were followed in a few hours by all the symptoms of acute meningitis. The gentleman's life was saved by active depletion by the lancet and cups, active purging, blisters, and the other remedies adapted to a case of encephalic inflammation.

Dr. Huston stated that in 1836, the City Commissioners were engaged in the construction of a culvert, during a period of very hot weather. Among the men employed upon this work, Dr. H. saw several cases of sun stroke. He witnessed the post-mortem examination of four of the patients. There was no congestion of the brain, which greatly surprized him, as he had been taught to believe that such congestion was invariably the effect of sun stroke.

Dr. Pepper remarked, that he had never seen a case such as he had described, occur, excepting under the direct influence of the sun, combined with physical exhaustion from muscular exertion. The form of disease to which he has reference, occurs only when the thermometer is very high, and the solar rays intense, as is generally the case with us in July and August.

Dr. Reed stated that he had under his care, at the present time, a case of sun stroke. The patient, who is a drayman, was attacked between six and seven o'clock in the morning. He was violently convulsed; after the convulsions ceased, he remained insensible for two days, with a feeble pulse, cool skin, and pallid, relaxed countenance. He was treated by stimulants, camphor, and, finally, a blister to the back of the neck. He is now slowly recovering, but is still very feeble.*

* Dr. R. states: This case has since proved fatal, although he confesses that he entertained very strong hopes of a much more favourable issue at the time. It may be somewhat interesting to notice, he adds, that this case fully corroborated the very interesting remarks made by Dr. Pepper in relation to the enfeebled and softened condition of the heart, which he discovered in several cases. Before death the intellect was very much impaired. The man lived ten weeks after the attack.

Dr. R. saw in the Dispensary, two cases, both occurring in women whilst washing clothes in the sun. In the one case the patient fell down in a state of insensibility. She was bled before Dr. R. saw her. She remained insensible for twenty-four hours. Sinapisms were applied to her extremities, cold to her head, and purgative enemata. On recovering, she described her sensation when attacked, as though she had been suddenly struck upon the head. In the other case, the attack was, in all respects, similar. The patient died in twelve hours. Upon examination after death, blood was found effused beneath the membranes of the brain.

Dr. Betton saw a case of sun stroke several years ago: the symptoms were such as to induce him, at first, to resort to stimulants, but subsequently he resorted to depletion. The patient recovered with paralysis; and since then has been unable to endure the heat of the sun.

Dr. Jackson had no doubt that there were many cases in which patients fell down, and speedily died, from the effects of heat. Such cases will not, of course, bear depletion; but, in other instances, exposure to the direct rays of the sun did, unquestionably, produce acute inflammation of the meninges of the brain, for the removal of which, active depletion would be demanded.

Dr. Pepper could not conceive of a case of meningitis terminating fatally in six days.

Dr. Jackson did not mean to say that in the cases described by Dr. P. there existed meningeal inflammation, but only that such inflammation might be produced by exposure to the sun's rays during the heat of summer. Even where bleeding is not demanded, the resort to stimulants may not be indicated. He recollects the case of a man labouring in the harvest field, who was suddenly seized with convulsions, during the intervals of which the patient was insensible. Mustard plasters were applied to the neck and legs, while water, in a slender stream, was poured from a height upon his head, at intervals, during the whole afternoon. Under this treatment the patient recovered.

Dr. Remington had seen several cases of coup de soleil. The patients were generally of intemperate habits; they fell down suddenly in a state of insensibility, and after a period became convulsed. They all recovered under the use of sinapisms and the lancet. He has never seen any who, after recovery, were affected with the slightest degree of dementia. He can, however, easily conceive, that in cases which have not been actively treated, chronic inflammation of the brain, or effusion beneath the mem-

branes or into the cavities of the brain, may occur, giving rise to disturbance of the mental powers. Dr. R. believes that prompt depletion is all important to prevent this result.

Dr. Parrish remarked, that he had no experience in the disease brought to our notice this evening by Dr. Pepper. He had, however, been much interested in the views advanced by Dr. P., in regard to its pathology and treatment. They were certainly different from those entertained by medical practitioners generally. The doctrines of congestion and inflammation, as applied to all violent diseases which rapidly destroy life, were, until within a few years, very generally held and taught by medical authorities. It was once thought a heresy to question this condition, in many diseases, where its influence is now doubted, or even proved not to exist. In the "coup de soleil" the symptoms are such as to indicate, to the unthinking practitioner, a rush of blood to the head, and the first thought is to abstract blood from the arm; this was always done under the old notion of congestion, and before proper distinctions began to be drawn between those violent commotions of the nervous system which are the result of direct debility or of diminished nervous power, and those which arise from the opposite condition.

The similarity in the phenomena presented by the nervous system under these two opposite states, of repletion and exhaustion, is one of the most curious and interesting facts in medicine, for the elucidation of which the profession owes much to the researches of Dr. Marshall Hall and other modern inquirers

Dr. Pepper has added a valuable contribution to our knowledge, by giving us the result of the post-mortem appearances in these cases, thus demonstrating that a train of symptoms heretofore attributed to congestion are produced by another and very different condition. The causes which induce the disease under notice, fatigue and exhaustion, and the effect produced by stimuli in relieving it, all concur in strengthening the views advanced of its pathology.

Altogether, Dr. P. regarded the subject as one of great interest; and the clear manner in which it has been elucidated will give to the profession more definite and satisfactory ideas upon this singular disease, than have heretofore been entertained.

Special Meeting, August 26th, 1850.

Dr. Meigs, Vice President, in the chair.

Present, twelve members.

The Vice President stated that he had directed the present special meeting to be called at the request of several of the Fellows, in order that the College might take such action in reference to the loss they have sustained by the recent death of their late colleague, Dr. Joseph Hartshorne, as they should deem proper. After making a few appropriate remarks upon the professional standing and private worth of the deceased, the following resolutions were presented by a Committee, consisting of Drs. Bell, Parrish, and Hallowell, appointed to prepare them:

Resolved, That the College have learned with deep emotion the melancholy announcement of the death of its esteemed Fellow Dr. Joseph Hartshorne.

Resolved, That in giving utterance to their feelings upon the event, the Fellows of the College are sure to express, at the same time, those of the Profession of which the deceased was so long an eminent and esteemed member, and of the community amid which he toiled so faithfully and so ably.

Resolved, That the example given by the deceased of devotion to his professional duties, of great skill, joined to a frank and manly bearing, in the exercise of them, be received by us as an example worthy of our imitation.

Resolved, That a Fellow of the College be appointed to prepare a biographical notice of Dr. Hartshorne, to be read before the College, and inserted in its Transactions.

Resolved, That a Committee be appointed to communicate to the family of the deceased the sympathy of the College in their bereavement.

Resolved, That the proceedings of this meeting be published in the Professional Journals of this City.

The foregoing resolutions were unanimously adopted, and the Gentlemen by whom they were prepared were appointed the Committee under the fifth resolution.

Stated Meeting, September 3d, 1850.

Dr. Meigs, Vice President, in the chair.

Present, twenty-four members.

The Library Committee acknowledged the receipt, from the Sydenham Society of London, of the following works:

Puerperal Fever and other Diseases peculiar to Women. By Fleetwood Churchill, M. D.

The Works of Sydenham. English Translation. Vol. 2.

Dr. Pepper read a paper containing an account of

Cases of Pseudo-Membranous Croup.

Two fatal cases of membranous croup having fallen under my observation during the past winter, I have thought that their history might elicit some useful remarks from the Fellows of the College, upon the propriety of tracheotomy in this frightful disease.

The first case was that of a little girl, aged six years. The disease commenced with slight hoarseness and some soreness of the throat; but the child continued to play about the house, and the symptoms were so slight as not to excite the least uneasiness on the part of the parents. The following morning I was requested to visit the child, and found it suffering with slight fever, huskiness of the voice, and occasional croupy cough. The fauces, soft-palate, and tonsils were somewhat injected, but no trace of false membrane could be detected. An emetic of ipecacuanha was promptly administered, and this was followed by calomel, gr. vi.; during the afternoon some twenty-five leeches were applied over the larynx, with evident relief of the symptoms. During the night she took a teaspoonful of the following mixture, every two hours: syr. ipecac., syr. senegæ, aa ℥j. She was also directed calomel, gr. j., every two hours.

On the morning of the third day of her attack, there was a decided remission of the most distressing symptoms; the hoarseness, dyspnœa, and fever had all greatly abated, and hopes were now entertained that the disease had yielded; but towards evening the fever had increased, and with it there was a decided increase of the laryngeal symptoms. The voice had now become suddenly reduced to a mere whisper, the cough was muffled, and the dyspnœa extreme; the paroxysm, however, only lasted a few minutes, and was succeeded by a decided calm. Upon inspecting the throat, now, for the first time, patches of fibrinous exudation were

seen upon the tonsils. These were touched with a solution of the nitrate of silver, in the proportion of twenty grains to the ounce of water, and after this, free vomiting was induced by a large teaspoonful of powdered alum mixed in molasses. The child was also placed in a bath at the temperature of 95° F., and a small blister was applied over the larynx, and allowed to remain on only one hour.

Late on the same evening there was a return of the distressing symptoms, and Dr. C. D. Meigs now saw the patient with me. At this time the voice was whispering, the cough suppressed, and the breathing more or less stridulous. The child being vigorous, it was deemed expedient to draw blood from the arm, and the blood thus drawn—amounting to about ʒiv.—presented a decided buffy coat. In this connection I may, however, observe, that the vesicated surface over the larynx had not become covered with the diphtheritic exudation so commonly seen in pseudo-membranous croup. Some relief followed the depletion, and the child passed a tolerably comfortable night. The following morning she commenced taking, every hour, a teaspoonful of tartar emetic solution, in the proportion of one grain to eight ounces of water. During the day the attacks of oppression became more and more frequent, and we were occasionally obliged to resort to the alum emetic and warm bath to relieve these paroxysms. The vomiting was always followed by temporary relief, but at no time was there any false membrane discharged, though, occasionally, the secretions of the fauces, coagulated by the alum, presented somewhat that appearance.

On the fifth day of the attack, the dyspnœa, loss of voice, and stridulous breathing had become more permanent; the pulse was feeble, and the patient evidently more prostrate; there was slight œdema of the face, and the lips and nails were a little blue. She was now directed wine whey and chicken soup; and, in place of the tartar emetic, she took one of the following powders every two hours: antimonii sulphuret. præcip., grs. ii., potassæ nitrat., grs. xviii., calomel, grs. ii., divided into viii powders. No important change occurred in the case up to the following day, when at the time of visit there was another remission, and the patient really appeared better. The exudation had entirely disappeared from the palate and tonsils; distinct vesicular murmur could be heard throughout the lungs, masked only, occasionally, by sibilant and sonorous rattles; and the percussion over both lungs was perfectly natural. During the day, however, there was a return of the severe croupy symptoms; and, at such times, the little sufferer would tear at her throat in the greatest agony. Emetics, with the warm bath, and an occasional anodyne enema, afforded temporary relief; but about five o'clock the same evening, whilst emerging from the bath, she was seized with general convulsions,

accompanied by dyspnœa, threatening immediate dissolution. I had left the patient but a few minutes, and on my return found that several medical friends had been called in during the alarm of the family. The pulse was frequent and feeble, the respiration hurried and laborious, and the child more or less cyanosed. Strong wine whey was now freely administered, whilst, at the same time, sinapisms were applied to the extremities. Under this treatment, the circulation and respiration were again, in a measure, restored, and the child's condition rendered far more comfortable.

It was, however, apparent that another such attack must inevitably prove fatal. Other means having failed, tracheotomy now appeared to afford the only chance. The operation was not urged upon the parents, but was anxiously sought after by them. Accordingly, at six P. M., the child was placed upon the table, and the trachea opened by Dr. Goddard, in the presence of Drs. C. D. Meigs, Page, and J. H. B. McClellan. A folded pillow was placed under the neck, so as to bring the trachea into bold relief. An incision, about an inch and a half long, and nearly an inch deep, was necessary before the trachea could be exposed; several of its rings were now rapidly divided; but at this stage of the operation there was some slight delay, owing to the necessity of applying a ligature to control the copious venous hæmorrhage. When the trachea was first opened, the child had a convulsive movement, and rapidly passed into a state of perfect syncope; but from this it soon recovered, and the blood, which had been drawn into the bronchia by the acts of inspiration, was now forcibly driven out by the violent expiratory efforts. Small portions of the trachea on either side of the incision were now removed, so as to leave an opening somewhat larger than the rima glottidis; and this was kept open by means of a thick leaden wire passing under the neck, each end pressing upon the lips of the wound. By a delicate pair of forceps, several large pieces of false membrane were drawn out of the trachea, whilst any viscid mucus or other secretions which tended to obstruct the orifice were carefully removed by small pieces of moistened sponge. It was not deemed necessary or expedient to swab out the trachea by means of a small probang, as recommended by Trousseau; nor was a solution of the nitrate of silver applied to the mucous membrane, with the view of preventing further exudation. In fact, the respiration through the artificial opening appeared so free and easy, that it was considered best not to resort to any apparently uncalled-for manipulations. To prevent the injurious effect of cold air coming in immediate contact with the sensitive bronchia, an elevated temperature of the air of the apartment was maintained throughout the after treatment.

About one hour after the operation, the pulse was 130, and the respirations about thirty in the minute. The temperature was

also good, and the colour had returned to the cheeks and lips. The child appeared perfectly conscious, but of course could make no articulate sound or even whisper, since no air now passed through the glottis. She also swallowed with great ease the milk punch which was administered on account of the exhaustion consequent upon the operation. When small pieces of ice were placed in the mouth, they were eaten with avidity and apparent pleasure. Towards morning, however, there was an evident change for the worse; the fluids given by the mouth now passed into the larynx, and appeared at the wound, and thus tended to excite spasmodic cough; the pulse rose to 140, and became more feeble; and carpo-pedal spasms were almost constant. To relieve this spasmodic condition, several enemata of laudanum were administered, but without affording any relief. From this time the respiration and pulse gradually became more frequent and feeble, and the patient gradually sank, and expired at two P. M. the following day—just twenty hours after the operation, and about six days from the commencement of the attack.

Examination post mortem the following day. Patches of false membrane were found adhering to different parts of the larynx, particularly about the ventricles; and the mucous membrane throughout was minutely injected and somewhat tumid, but not ulcerated. Commencing about one inch below the opening, the trachea was completely coated with firmly adherent plastic or fibrinous exudation, which extended into the large bronchia, and even into some of the minute ramifications. The small bronchial tubes were not, however, so completely obstructed by the false membrane as to preclude the possibility of air having entered the cells of the lungs during forcible inspiration. The exudation was, however, perfectly white, and exceedingly tough, so that it could be drawn out in small strips or shreds. The mucous membrane of the trachea and bronchia was in much the same condition as that of the larynx. No pneumonia or emphysema, or even congestion of the lungs could be detected. The right cavities of the heart contained a large and firm fibrinous concretion, which was prolonged for some extent into the pulmonary artery. The other organs appeared to be perfectly healthy.

In the case narrated, the exudation did not commence in the fauces, as is most commonly the case in the diphtheritic form of croup, described by Bretonneau and other continental authors. This absence of plastic exudation on the tonsils, together with the fact that no false membrane was discharged in the act of vomiting, rendered it somewhat difficult at first to recognise the exact character of the disease. The vibratory sound mentioned by Barth and Roger, as indicating the presence of floating false membrane in the larynx and trachea, though carefully sought after, could not be detected in the present instance. The loss of voice,

in connection with the stridulous breathing which supervened at the end of the second day, were well calculated to excite the worst suspicions; and it was those symptoms which led to the further examination of the throat, and the ultimate detection of the exudation on the tonsils. It is, however, by no means improbable that at first it was in reality a case of simple catarrhal croup, and that the exudation was but the ultimate result of a high grade of inflammation occurring in a vigorous child. This view of the case is more or less confirmed by the fact that no diphtheritic exudation was formed on the vesicated surface, as so commonly occurs in an asthenic condition of the system. In this case the character and extent of the false membranes were different from what occur in ordinary diphtheritis; they were tough and white, and extended far into the ramifications of the bronchia, whereas, in the few cases of diphtheritic croup that have fallen under my observation, the membrane has been ash-coloured, soft and pulpy, and in a great measure confined to the larynx and trachea. Guersent states that in not more than one case out of three does the false membrane extend into the bronchia. Dr. C. West, on the other hand, states that in England, nothing is more common than to find the plastic exudation impacted into the small bronchia, and such is most unquestionably the case in the asthenic form in our own country.

From the history of the case, it is by no means improbable that the inflammation invaded the bronchia, trachea, and larynx simultaneously, and gave rise to the rapid deposit of false membrane, on the different parts of the mucous membrane. Under such circumstances, the application of caustic to the tonsils with the view of preventing an extension of the mischief to more vital parts, could have been of but little avail. It is also quite evident that in such a case the operation of tracheotomy would afford only a very slight prospect of success; in the present instance, however, the true state of the case was only revealed after death. But a few hours previous to the operation, distinct vesicular murmur could be heard throughout both lungs; and from this the inference was fair, that in all probability the bronchial tubes were unobstructed. Under this impression the operation was performed, and yet the autopsy revealed a considerable amount of exudation in the bronchia,—not sufficient, it is true, to have prevented the development of the respiratory murmur heard so distinctly during life, but quite enough to have very materially interfered with the ultimate result of the operation.

The next case was that of a boy aged five years; he was a delicate and feeble child, suffering with habitual enlargement of the tonsils. For the first six or seven days he had occasional cough and slight hoarseness, but was not considered sick, and had been allowed to play about as usual. The compound syrup of

squill had been freely given with the view of inducing vomiting, but failed to produce the desired effect. No other treatment was pursued up to the night of the tenth day, when the child becoming alarmingly ill, Dr. F. W. Sargent was called in consultation with Dr. Spackman. They found him suffering with hoarse, stridulous cough; his breathing was laborious and noisy, his face flushed, skin hot and moist, voice reduced to a mere whisper; the pulse, though greatly accelerated, was not particularly full or strong. At this time the throat was carefully examined, but no exudation could be seen; the tonsils, however, were large and inflamed. An emetic of powdered alum was now directed, an onion poultice was applied to the neck, and the child was placed in a hot bath. Calomel, grs. ii., with Dover's powder, gr. ss., were to be given every two hours; and to relieve the spasm, three drops of laudanum were also directed.

On the following day the symptoms continued much the same, and fifteen leeches were now applied over the larynx, the alum being continued, occasionally, in emetic doses during the day; equal parts of powdered alum and sugar were also applied to the fauces every two or three hours.

I saw the patient for the first time on the following morning, or on the twelfth day from the commencement of the attack. The lips and nails were now blue, and the respiration was permanently stridulous, and attended with rapid dilatation of the nostrils; pulse 120, soft and full; surface bathed with perspiration. The tonsils were coated with an ash-coloured exudation, and were accordingly freely touched with a solution of nitrate of silver, in the proportion of grs. xv. to the ounce of water; this solution was also applied to the glottis and posterior part of the epiglottis, by means of a small curved probang. A small blister was applied to the front of the neck, and allowed to remain on for two hours. The alum emetics were continued as before, as were also the calomel powders, in connection with syr. senegæ, ʒi, every two or three hours. For nourishment, he now took freely of wine whey and broth. The next day the child was more cyanosed; dyspnœa extreme; countenance anxious; and yet he appeared free from pain, and in a listless condition. The above treatment was continued, with the addition of gr. i. carb. ammoniæ every hour; and as the disease was evidently fast tending to a fatal termination, the operation of tracheotomy was proposed. The father, however, had fully reflected upon this subject, and preferred leaving the child to its fate. It expired about noon of the same day—just thirteen days from the commencement of the attack.

The body was examined the following day. There was considerable emaciation, so that the outline of the larynx and trachea were unusually prominent for a child of that age. On cutting down upon the trachea, no blood-vessels were found over the

usual seat for opening this tube in cases of croup. The epiglottis and tonsils were coated with a thick grayish exudation, and this extended into the ventricles of Morgagni, and, in fact, throughout the entire larynx; but it was strictly confined to this locality, not a vestige of false membrane being found either in the trachea or bronchia. About the ventricles the mucous membrane presented a worm-eaten appearance; considerable œdema of the glottis also existed. The mucous membrane lining the trachea and larger bronchia was soft and injected, and completely covered with muco-puriform matter. Lungs, heart, and other organs perfectly healthy.

In connection with this case, I may mention, that an elder brother had died with this disease some days previously, and that a younger member of the family had been threatened with the same affection, which, however, was fortunately checked by the timely administration of an emetic, and the prompt application of the nitrate of silver to the tonsils. All the children of this family had enlarged tonsils, and were evidently of a scrofulous diathesis; the parents, however, were apparently perfectly healthy.

In this case the disease was evidently more asthenic, and the appearances revealed by dissection were such as are most commonly found under these circumstances. The exudation was ash-coloured, soft, and pulpy, and limited to the larynx. No doubt this condition would greatly have favoured the operation of tracheotomy, since there would have been no obstruction below the orifice; under these circumstances, it is highly probable that the muco-puriform matter would have been readily discharged by the spasmodic cough which so constantly follows an opening into the trachea; or, at all events, these secretions could have been readily removed by small probangs, whilst, at the same time, their further deposit could have been prevented by the alterative effects of a weak solution of the nitrate of silver instilled into the trachea, after the manner recommended by Trousseau. The prostration in the advanced stage of the disease was, in a great measure, the result of imperfect ventilation of the blood; and this difficulty once removed, the child could easily have been sustained by stimuli. Besides, we should remember, that in the present case the absence of adipose matter was exceedingly favourable to the operation. There is one interesting fact, however, in connection with this case, which was not alluded to when speaking of the symptoms: the day previous to the decease of the child, the state of the respiration was carefully examined, and not the least respiratory murmur could be heard over any part of the chest. From this, the impression at the time was, that the bronchia were probably obstructed by false membrane; and it was this conviction which deterred us from urging the operation more strenuously. The absence of the respiratory murmur was evidently owing to

the œdema of the glottis, and to the exudation in the larynx; and in this case, as well as the one first narrated, clearly shows the utter impracticability of arriving at any positive conclusion as to the exact condition of the bronchia in membranous croup.

In regard to the cause of the disease in the last mentioned case, there is surely no good reason why the mere occurrence of a similar disease in several members of the same family should be referred to contagion. They all possessed the same character of constitution, and were exposed to like causes, and were therefore liable to the same ailments. These cases bore no analogy to the malignant sore throat which so often occurs during the prevalence of epidemic scarlet fever, and which not unfrequently extends to the larynx, and thus produces fatal croup; the laryngeal affection thus induced is of course quite as contagious as scarlet fever itself, since it forms but a part of a specific disease.

But, decidedly, the most important question suggested by the history of the above cases, is in reference to the operation of tracheotomy. Upon this subject medical opinion is still unsettled: by some the operation being condemned under all circumstances, whilst by others it is advocated and urged prematurely. According to Trousseau, "il faut faire l'operation dès que nous avons aquis la certitude qu'il existe des fausses membranes dans le larynx;" and his reasons for thus urging an early resort to the operation are based upon the well known facts that, at a later period of the disease, the exudation is more apt to extend into the bronchia, whilst, at the same time, the increased state of asphyxia, and the exhaustion consequent upon protracted treatment, would greatly tend to diminish the chances of the operation. All who are familiar with membranous croup, are prepared to admit, that when once established, it is attended with great danger; but, at the same time, even the most desperate cases will occasionally recover under judicious medical treatment. Valliex states, that in 26 out of 31 cases, treated chiefly by emetics, more or less false membrane was discharged; and that, of this number, 15, or nearly one-half, ultimately recovered; whilst, out of 22 cases treated without emetics, only 1 recovered.

The success of the operation, in connection with the statement that tracheotomy, per se, is attended with no special danger, has been strongly urged in its favour. Bretonneau, out of 20 operations, had success in 6 cases; Velpeau saved 2 out of 10; and Trousseau, out of 112, had 27 recoveries—or about one-fourth of the whole number recovered. This success, however, is far beyond what has been attained in England; where, according to Dr. West, "the result of almost every instance of the performance of tracheotomy in cases of croup has been so unfavourable, that the operation is scarcely looked on as a justifiable proceeding." These different results can only be reconciled by the fact, that on

the Continent the disease is most frequently confined to the larynx, whilst in England, as well as in this country, the trachea and bronchia are not unfrequently simultaneously involved. The number of cases of croup in which tracheotomy has been performed in the United States, is as yet too limited to enable us to arrive at any positive conclusions. Hitherto, it must be confessed, the operation has been viewed in this country with much distrust, owing, in a measure, to the unfavourable reports by British writers, and in part to the comparative want of success in the few cases in which it has been here performed. How important, then, is it that every case of tracheotomy for croup, whether successful or otherwise, should be placed on record, so that, in the end, we may be enabled to judge for ourselves as to the merits of this vexed question.

Is it true that tracheotomy is, per se, unattended with danger? It is well known to the profession that the trachea has been repeatedly opened, for the extraction of foreign bodies, without giving rise to any untoward results; but, to say the least, it is exceedingly improbable that the short and plump neck of a child can be freely incised down to the trachea, without endangering, in the least degree, the life of the patient, and more especially so in a case of croup, where the veins are enormously distended. And yet Trousseau has opened the trachea one hundred and twenty times, without giving rise to any immediate bad effects; it remains, however, to be proved that the convulsions, copious hæmorrhages, and frightful syncopes, which so often follow this operation, have not had much to do with the unfavourable results which followed in three-fourths of these cases. In the instance which I have just narrated, the hæmorrhage was severe, and without great dexterity and presence of mind on the part of the operator, the child would have perished in a few moments.

If, then, it be true, that even the most desperate cases of membranous croup do occasionally recover under judicious medical treatment, and if, at the same time, it is quite impossible to ascertain, with any degree of certainty, either by the general or physical signs, the condition of the bronchial tubes, it appears difficult to resist the conclusion, that an operation so severe and so hazardous should not be performed except as a dernier resort.

Dr. Meigs related the case of a child in the last stage of croup, on which the operation of tracheotomy had been successfully performed.

He remarked, that auscultation could be of no practical value in determining the condition of the lungs in this form of croup, simply because the passage of air through the trachea was so much obstructed as to prevent the noisy filling up of the air-tubes, and thus the sounds usually heard were not perceptible.

Let any one inspire slowly through a pipe-stem or quill, and while his lungs are filling, immediately apply your stethoscope, and no sound will be perceived; hence it is apparent that the lungs may be free from disease, and yet the respiratory sounds be absent, from the partial closure of the entrance to the bronchia.

Dr. Meigs, considered the operation of tracheotomy to be attended with very little pain, in consequence of the patient being in a state of natural anesthesia, induced by the altered condition of the blood. At the period in which it would be justifiable to operate, the blood has become so far deprived of its oxygen as to fail to give vigour and sensibility to the nervous mass, and the patient feels but little; hence the objection as to pain in the operation does not hold. The great advantage of opening the trachea is, in his opinion, to let in at once the oxygen upon the blood, and thus to infuse into the nervous system renewed energy, which will enable the system to hold out against the disease, and give time for remedies to promote the cure.

Dr. Pepper believed that in the case narrated by him, in which the operation was performed, the child would have perished on the table, had it not been for the coolness and dexterity of the operator. The state of exhaustion and syncope often following the operation, when the system is already much exhausted by disease, is unfavourable to recovery, and constitutes an objection to it.

Dr. Pepper regarded the question of the propriety of the operation as one of increasing importance, which would be forced upon the practitioner in almost every case of severe membranous croup. The idea was abroad that this was an effectual means of saving the life of the child, and many parents would insist upon its performance, rather than abandon a child to its fate. He urged increased attention to the subject, and that an accurate record be kept of every case, both favourable and unfavourable, in order that the materials for forming a correct judgment might be accumulated.

Dr. Ashmead remarked, that during his residence in Paris last winter, he heard but little of this operation, except from Trousseau, its great advocate and supporter. He had seen two operations at the Children's Hospital, one by Trousseau, in which the patient recovered, and the other by Guersant, in which the patient died. In the latter the operation was performed in the advanced stage of the disease, while in the former it was performed early. It was the practice of Trousseau to operate at an early period, and hence, probably, his success. In England, and in this country, the operation is not considered justifiable until after all medical means of cure have failed; and this may be one reason why

the results differ so widely from those reported in France. He also heard it stated in Paris that the measure of success was much greater in private practice than in the hospitals.

Dr. Ashmead had performed the operation twice himself. In one case, where it was strongly urged by the family, he had operated on an only child in an advanced stage of the disease. The immediate result was most gratifying: the distressing dyspnœa was relieved, and the child fell into a pleasant slumber. In a few hours, however, the bad symptoms returned, and the little patient soon sank away. The parents, who were at first delighted, now became exasperated at the doctor, and he was obliged to get out of the way to escape their vengeance.

Dr. A. fully agreed with Dr. Pepper as to the impossibility of forming an accurate diagnosis of the state of the bronchial tubes by auscultation, and considered this one of the objections to the operation. He had made up his mind never to recommend tracheotomy, and only to perform it when strongly urged by those most interested, and then always with the full exposition of its dangers and uncertainty.

Dr. Condie remarked, that he had no experience in regard to the operation of tracheotomy in croup; nor could he make up his mind in reference to the value of the operation, from the contradictory reports made of its results and the proper period of the disease for its performance. If the operation were urged upon him by the parents of a child labouring under croup, where every remedy had been ineffectually resorted to, he should not certainly object to its performance, though he should expect less from it at this advanced period of the disease than if it had been resorted to at an earlier stage. After all, he was much inclined to believe that the operation can exert but little, if any, influence in arresting the fatal course of a case of membranous croup; and that the cases quoted in evidence of its beneficial effects would have recovered had it not been resorted to.

Dr. C. believed that, by a proper treatment in its earlier stages, croup would be rendered much less fatal, and the condition under which tracheotomy is supposed to be called for, would more seldom occur. He has seen much of the disease, and when he has been called sufficiently early to enable him to resort to direct depletion by the lancet or leeches,—the administration of active emetics, and subsequently large doses of calomel, combined with tartar emetic, with the use of the warm bath, &c.,—he has not found it to be so uncontrollable a disease as many have described it. Unfortunately, genuine croup is a disease very apt to mislead parents in its earlier stages. Though the child may be awoke at night from its sleep with difficult and wheezing respiration, and a loud ringing cough, a hoarse and indistinct voice, a hot skin and flushed

face, and the parents may be greatly alarmed at the moment; yet, as these symptoms usually abate after a short period, and the patient falls again into sleep, and in the morning is often only affected with hoarseness and a slight cough, it is considered only as an attack of cold, for which a few domestic remedies are resorted to, and it is only perhaps after the peculiar symptoms of the disease assume a more violent and continued character, that the physician is summoned, and finds the whole of the larynx thickly covered with the membraniform exudation.

Dr. C. was called to a case of this kind, occurring in a little boy of two years of age, on Sunday morning last. The child was at once freely bled by leeches applied around the anterior part of the throat, vomited repeatedly by the use of the alum, as directed by Professor Meigs, and after being immersed in a warm bath, was directed every two hours three grains of calomel, three of nitre, and an eighth of a grain of tartar emetic. The more violent symptoms were relieved by this treatment, but the difficulty of respiration being still very considerable, a strong solution, twenty grains to the ounce, of nitrate of silver, was applied, by means of a sponge secured to the end of a whalebone, to the larynx. A violent paroxysm of coughing, followed by copious vomiting of a thick glairy fluid, immediately ensued; the respiration, almost immediately, was greatly relieved. The patient is now comfortable, and will no doubt soon recover.

The views of some of our physicians in regard to the character of many of even those diseases of most common occurrence, have been based upon observations made in the large hospitals of Europe, upon a class of patients who with difficulty tolerate the least degree of direct depletion. It is probably from this circumstance that the lancet and leeches have been condemned in the treatment of croup; Dr. C. believed the disease, as it occurs with us, to be one of an extremely acute inflammatory character, and that its cure is most certainly ensured by prompt depletion and other active remedies resorted to in its early stage.

Dr. Parrish wished to present one consideration in connection with this subject, which had strongly impressed his mind during the reading of the interesting paper to which we had listened. In neither of these cases did a sufficient amount of false membrane exist in the air-passages to form a complete mechanical obstruction to the passage of air into the lungs; in one the effused membrane was ash-coloured, soft, and pulpy, and this is the case in the very worst forms of diphtheritic croup, where the fatal termination is the most rapid and certain. In a post-mortem examination at which he was present a few months ago, the same fact was remarked; the air-passages were loaded with a semi-fluid matter, more like unhealthy pus than membrane—the trachea and larger

bronchial tubes being quite pervious. Now it is evident that in these cases tracheotomy can do no good. Dr. P. believes that death does not often occur in this disease from a fixed mechanical impediment to the passage of air through the trachea, but rather from spasmodic action, combined with an altered state of the blood.

When it is remembered that the disease occurs in the highly sensitive state of the system peculiar to infancy and early childhood, and that the difficulty of breathing is, to a certain extent, paroxysmal, as in the cases mentioned by Dr. Pepper this evening, it is fair to infer that spasmodic action has much to do with the fatal result.

In confirmation of this view, Dr. Parrish referred to a case reported by him to the College two years since, in which the most marked advantage followed the use of assafœtida and laudanum injections frequently repeated. The child was labouring under an aggravated form of diphtheritic croup, and was regarded as in an almost hopeless condition, when, in order to assuage its sufferings, and without any prospect of permanent benefit, lac assafœtida and laudanum injections were directed.

These had a soothing effect. Sleep was induced, and the system refreshed, thus prolonging the time in which calomel and occasional emetics could act beneficially. The child recovered, contrary to all expectation. Since then several cases of recovery have been reported in the New Jersey Medical Reporter, by the editor, Dr. Joseph Parrish, in which the same course was adopted.

Dr. P. believed that the influence of the nervous system in this disease was too much overlooked, and that by endeavouring to soothe and quiet irritation and spasm, the more active antiphlogistic remedies would operate with greater effect, and we should at least gain time.

He merely threw out this suggestion for consideration, without wishing to divert attention from the question of the propriety of tracheotomy, in regard to which he agreed fully with the views just expressed by Dr. Condie.

Dr. Evans related a case of violent spasm, produced by the presence of a small portion of muriated tincture of iron, which accidentally got into the larynx of an insane patient, to show the value of the tobacco cataplasm in relaxing spasm, and the influence which spasmodic action may have in this form of croup. He agreed with the importance of keeping this element of the disease in view; and regarded full and copious bleedings as one of the best means of relaxing this spasmodic action.

His preceptor, the late Dr. Hartshorne, used to say, that he never lost a case of croup when he was allowed to bleed freely

in the commencement. Dr. E. believed that the fear of bleeding was one cause of the high mortality of this disease.

He also referred to the reported advantages of ice and iced water applied to the throat, as an excellent method of relaxing spasm. Had no experience as to the operation of tracheotomy, but should regard it justifiable only as a last resort.

Dr. Neill called the attention of the College to certain peculiarities of the Sphenoid bone, not described by anatomical writers. In the description of the bone given in the books, we are told that the pterygoid processes project downwards perpendicularly, which may be the case in a large proportion of the sculls of the European races. If, however, we examine a variety of specimens, we find that the perpendicular direction of the pterygoid processes does not invariably prevail. Thus, in the African, they are very oblique, running nearly parallel with the oblique line of the face. In the Mexican scull they are very nearly vertical. There will very generally be found a parallelism between the direction of these processes and the line of the face. In the fœtus they have the peculiar obliquity of the face: and in all races, the nearer the characteristics of the adult head approach those of the fœtal, will the direction of the pterygoid processes be found more oblique. Dr. Neill was not aware that the fact just stated had any important practical bearing; the direction of the pterygoid processes will, however, have some influence upon the direction of the posterior nares, of which it is important that the surgeon should be aware. The more oblique the processes, the more oblique will be the posterior nares, which follow, of course, the direction of the former.

Dr. Bell presented the Annual Report on Public Hygiene, the reading of which, owing to the lateness of the hour, was postponed.

On motion, it was *Resolved*, That the College adjourn to the seventeenth instant.

Adjourned Meeting, September 17th, 1850.

Dr. Bond in the chair.

Present, twenty members.

Dr. Bond presented to the Library the following works:

The Philosophical Transactions and Collections, to the end of the year 1700. Abridged by John Lowthrop, A. M., F. R. S. 3 vols. quarto. London: 1716.

Observations on Certain Parts of the Animal Economy. By John Hunter. Quarto. London: 1786.

Cours D'Opérations de Chirurgie. Par M. Dionis. Paris: 1777. 8vo.

A Treatise on the Materia Medica, intended as a Sequel to the Pharmacopœia of the United States. By Jacob Bigelow, M. D. 8vo. Boston: 1822.

Eight Chirurgical Treatises. By Richard Wiseman. 2 vols. 8vo. London: 1719.

An Essay on Hydrocephalus Acutus. By John Cheyne, M. D. 12mo. Philadelphia: 1814.

Herman Boerhaave's Materia Medica. 8vo. London: 1741.

A Manual of Pathology. By L. Martinet, D. M. P. Translated, with Notes and Additions, by Jones Quain, M. D. Philadelphia: 1830. 12mo.

Dictionnaire de Médicine. Par P. H. Nysten. 8vo. Paris: 1814.

De la Médicine Operatoire. Par M. Sabatier. 3 vols. 8vo. Paris: 1810.

A Treatise on Diet. By William Davidson, M. D. 12mo. London: 1843.

Dr. Ruschenberger laid upon the table a pamphlet, entitled A Brief History of an Existing Controversy on the subject of Assimilated Rank in the Navy of the United States.

Mr. V. F. Harrison presented to the College a copy of an engraved likeness of Dr. Joseph Hartshorne.

On motion, it was *Resolved*, That the Committee on Library be requested to have the likeness of Dr. Hartshorne framed and hung up in the chamber of the College, and to procure, also, copies of such engraved likenesses of deceased Fellows as have been published, for the purpose of having them likewise framed and suspended in the chamber.

The Committee appointed to report what action it is proper and expedient for this College to take in reference to a communication from the College of Pharmacy, on the subject of the Inspector of Drugs for the Port of Philadelphia, reported: That, in their opinion, it would best comport with the dignity of the College of Physicians to present to the Secretary of the Treasury a separate memorial, urging upon him, in the strongest terms, the importance, before making the appointment of Inspector of Drugs, to inquire closely into the entire competency of the candidate to fulfil, in a satisfactory manner, the duties of the office; pointing out, at the same time, in the memorial, the nature and extent of these duties; the necessity, in consequence of the important public and private interests involved, of their strict and faithful fulfilment, and the utter impossibility of this being accomplished by any one who is not theoretically and practically conversant with all that knowledge which must be brought into requisition in forming his decision as to the qualities and true value of the drugs and chemicals submitted to his examination. Thus, while omitting any direct allusion to the incapacity of the present Inspector of Drugs for this Port, furnishing to the Secretary of the Treasury the views of this College as a guide to him and his successors in making the appointment. In conclusion, the Committee offered the following resolution:

Resolved, That a Committee be appointed to prepare a memorial in accordance with the foregoing suggestions, to be signed by the President of the College, and forwarded to the Secretary of the Treasury.

The said resolution was adopted, and Drs. Condie, Carson, and Parrish were appointed the Committee.

On motion, Dr. Charles Evans was appointed to prepare a Biographical Notice of the late Dr. Joseph Hartshorne.

Dr. Bell read his Report on Public Hygiene,—for which see Appendix.

Stated Meeting, October 1st, 1850.

Dr. Meigs, Vice President, in the chair.

Present, twenty-five members.

The following donations to the Library were received:

Lectures on Medical Missions. Delivered at the instance of the Edinburgh Medical Missionary Society. From the Society.

Observations on Certain of the Diseases of Young Children. By Charles D. Meigs, M. D. From the Author.

It being reported by the Secretary that Dr. M. P. Hutchinson had refused to pay his annual contributions for the space of three years, on motion, it was *Resolved*, That the name of Dr. Hutchinson be stricken from the list of the Fellows of the College.

The Committee on Memorial to the Secretary of the Treasury reported the following draft, which was approved:

The Memorial of the College of Physicians of Philadelphia, to the Secretary of the Treasury of the United States,

Respectfully represents:

That the office of Inspector of Drugs for the Port of Philadelphia is one, the duties of which involve the most important public and private interests, affecting the lives and health of the citizens.

Being strictly a professional office, it requires, for the proper fulfilment of its duties, high professional as well as moral qualifications; and this College would therefore most respectfully urge upon the Secretary of the Treasury the appointment of no person as Inspector of Drugs, unless he shall be found thoroughly acquainted with Chemistry and Pharmacy, and practically conversant with the nature and physical properties of drugs and chemicals, and with the means for detecting their impurity and sophistication.

The Fellows of the College, from their position and pursuits, are fully aware of the great importance of the proper inspection of drugs, having frequently witnessed the evil effects arising from their adulteration and sophistication; and they have therefore deemed it their duty to address you upon this subject, not with a view of recommending any individual, or of subserving the interests of any political party, but solely to direct your attention to the qualifications which they deem essential to the proper exercise of this responsible office, and to the faithful carrying out of the object contemplated by the act of Congress,—to prevent the importation of adulterated and spurious drugs and medicines.

Dr. Keating related the following account of

A Case of Poisoning from Eating Peach-Kernels.

On Tuesday, the 10th of September, I was sent for, in great haste, to visit the child of Mr. B. in Gaskill street.

Upon reaching the house, I found that a little girl, of three years of age, who, up to the moment when I was sent for, had enjoyed excellent health, had come in from playing with an older brother, and suddenly placing her hand on her head, fell on the floor perfectly senseless.

When I saw the child, she was lying on the bed insensible; respiration slow, deep, and sobbing; no convulsion of the limbs, but a faint, flickering motion was observable about the muscles of the lip; hands and feet were icy cold; eyes prominent, pupils dilated; pulse slow and feeble; finger nails of a livid colour, and the hands slightly clenched. My inquiries elicited nothing from the mother which could account for the extraordinary condition of the child. Despairing of obtaining any clue to the case, and as a dernier resort, I applied my face to the child's mouth, and immediately recognised in her breath a strong odour of prussic acid. The idea of peach-kernels immediately suggested itself to my mind; and upon interrogating her brother, I found that, previous to her coming into the house, she had managed to snatch from him a large quantity of peach-kernels which he had been preparing for his mother's use. He also informed me that he saw her put a large quantity in her mouth at a time. Convinced, then, that I had to deal with a case of poisoning by prussic acid, I immediately had recourse to the proper treatment. I dashed a small pailful of water upon the child's head and spine, and in a few moments had the satisfaction of seeing her take a full respiration, and evince some signs of returning consciousness. I immediately administered an emetic, consisting of five grains of sulphate of zinc, and ten of powdered ipecac.; this was followed by copious emesis, consisting of a large quantity of peach-kernels, emitting all the peculiar fragrance characteristic of prussic acid. Sinapisms were also applied to the spine and to the extremities, and after the vomiting had ceased, I ordered thirty drops of the aromatic spirits of ammonia in water, to be repeated every half hour. The child appearing much relieved, and consciousness having entirely returned, I left the house.

Upon visiting my little patient two hours after, and finding that the pulse was full and rapid, face flushed, conjunctiva injected, and that she was complaining of violent pain in the head, I took about three ounces of blood from the arm, and ordered cold applications to the head and an enema for the bowels. When I return-

ed again in the evening, all untoward symptoms had vanished, and the child was playing about, and apparently as well as ever.

Upon testing the contents of the stomach with the liquor potassæ and a solution of the sulphate of iron, the prussian blue was instantly precipitated in abundance. From the condition in which I found the child, I have every reason to believe that had not the proper remedies been promptly applied, life would have soon become extinct.

As it is important to be able to diagnosticate at once the difference of the symptoms consequent upon poisoning by opium and prussic acid, I will enumerate those points which struck me most forcibly in this case.

In the first place, the history of the case affords us a means of distinction, the rapidity with which the effects supervened, the rapidity with which the case terminated, and then the absence of blueness in the skin, and of the slow, full pulse.

It may seem strange that an article which is so generally used, and of which, consequently, children must be constantly partaking, should so seldom manifest such serious consequences. In answer to this, we would suggest, that the quantity eaten in this case was unusually large, and that as the peaches were exceedingly acid, it may be that the kernels contained an unusual quantity of the acid; or perhaps the child may have had some idiosyncrasy, by which she was peculiarly liable to the poisonous effects of the acid, even in the minutest quantity. Moreover, it is a question of much importance whether, perhaps during the summer months, numbers of children may not have succumbed to the fatal effects of this acid, without their real condition ever having been suspected. The accumulative effects of this poison have been generally denied; the rapidity with which death supervenes generally depends upon the quantity taken; it is generally thought, however, that if a person live forty minutes after the poison has been swallowed, that the danger is over.

It would be well for medical men to recollect that the bitter almond, cherry laurel, bird cherry, peach, the leaves and seeds of the nectarine and apricot, and the seeds of the plum and cherry, all contain some of this acid.

Parents, then, should keep a strict watch over their children, for it is an admitted fact that half of the deaths of childhood occur from the kind and quantity of ingesta; and hence the mouth not only forms the avenue through which the life-giving principle is received, but is also, unfortunately, the portal through which the fell destroyer most generally creeps in.

Dr. Coates cited the chemical theory, that peach-kernels and various analogous substances do not properly contain hydrocyanic acid, but generate it, with an uncertain rapidity, under the action

of the air, atmospheric temperature, and other ordinary agents, in which circumstances eremacausis and other changes take place. This, he believed, was the only explanation which had been given of the surprising observation, that the smell of strong hydrocyanic acid was but little more noticeable than that of peach-kernels, bruised peach-leaves, and other natural substances, commonly innoxious.

It was thought, he believed, to be owing to the fact that the particles which constitute hydrocyanic acid had a peculiar attraction for one another, and a facility for combining, beyond others, when presented under these circumstances, and in the proportions in which they were afforded by the natural productions alluded to. In this they resembled the particles which constitute ammonia; the one being the regular and general result of the decomposition of animal matter; the other, of that of vegetable substances of this particular class: forming one of the analogies of modern chemistry.

He observed, that the process of mastication and the commencement of digestion were well calculated to accelerate decomposition, which was their obvious physiological purpose; and he hoped that when knowledge should be acquired of the causes and circumstances which regulate the formation of hydrocyanic acid in the cases alluded to, we should be better able to explain the irregular and unexpectedly dangerous action of such apparently innocent articles as peach-kernels in Dr. Keating's case, and of double distilled noyau, with other analogous occurrences.

Dr. Condie stated, that since the meeting in September, when the subject of sun-stroke was brought before the College by the interesting remarks of Dr. Pepper, he had seen three cases of the disease, produced, as he supposed, from exhaustion, the result of labour and intense heat. Two fell under his own care, and one under the care of a medical friend and former pupil of his. All of these cases occurred in labourers of intemperate habits; in all the disease was marked by violent convulsions, alternating with nervous tremors, a cool, flaccid skin, dilated pupils, injection of the superficial veins about the head, and a small, tremulous pulse. They were all seized between twelve and three o'clock, while the patients were engaged in laborious occupations in the open air. The two cases which came under his own care were treated by sinapisms to the extremities and to the epigastrium, cold to the head, and dry frictions to the limbs. So soon as the patients could swallow, at first ammonia and camphor, and, subsequently, brandy and water, were administered internally. They both recovered very promptly, though, for several days, they exhibited great debility, languor, and disinclination to move about or converse. The other case was treated, at first, in the same manner as

the foregoing, but after consciousness was restored, the patient becoming flushed in the face, with considerable heat about the head, and the pulse exhibiting an undue degree of fulness, the stimulants were entirely discontinued; sixteen ounces of blood were taken from the arm, an active purgative enema was administered, and subsequently a blister was applied to the back of the neck. The patient is rapidly recovering, but has exhibited, at intervals, great forgetfulness, some incoherence of language, and other indications of derangement of mind.

Dr. Condie called attention to the very great prevalence of remittent fever during the present season. Along the Delaware and Schuylkill rivers he had seen a much greater number of cases during the last month, than for many years previously.

Dr. Keating inquired whether the cases which had fallen under the notice of Dr. C. were attended with diarrhœa. He had seen some cases in which the diarrhœa had been very troublesome, and was only arrested after the administration of quinine in five grain doses.

Dr. Condie replied, that he had met with several cases similar to those described by Dr. K. In one case, in particular, that of a young lady in the upper part of the Neck, the diarrhœa was profuse, and very harassing to the patient. Nothing that was given had the least effect in arresting the discharges, until she was placed under the use of quinine, when the diarrhœa almost immediately ceased, and gave no further trouble.

Dr. Morris, as an evidence of the proneness to intermittent and remittent fevers, stated the fact, that cases had occurred within portions of the City limits rarely visited before by those diseases.

Dr. Parrish had met with two cases in the southwestern section of the City.

The question being asked, what was the experience of the Fellows present in regard to the effects of the early exhibition of Quinine in remittent fever?—

Dr. Jackson remarked, that he had seen much of both intermittent and remittent fever. He had formerly practised extensively in a region of country where these diseases were of common prevalence, and often to a very great extent. He had always pursued the good old plan of waiting for a decided intermission, as indicated by the occurrence of perspiration, in remittent fever, be-

fore giving either bark or quinine; and he was convinced that even in intermittent fever it is not a safe practice to commence with either until the patient's system is prepared for their action by a proper course of treatment. Quinine is a tonic and stimulant, and it was evident that during the period of febrile excitement, or of inflammation and congestion, it can do nothing but increase the disease.

Dr. Condie wished to inquire of Dr. Jackson what were the facts upon which he based his opinion as to the stimulant effects of quinine. For his own part, he had been long convinced that the curative powers of the bark and quinine, in fever and other diseases, were the result of the sedative influence of those remedies. He had never ventured upon the use of quinine in remittent fever, until a decided tendency to intermission had occurred; but should not certainly be deterred from the administration of quinine at an earlier period from any fear of its stimulating properties.

Dr. Jackson replied, that having practised for many years in a miasmatic district, and given immense quantities of quinine, he had had ample opportunities for observing the effects of the remedy; and from the observations thus made, he was convinced that it acted as a stimulant tonic; and he never could be made to believe that the administration of such a remedy was proper in the stage of high febrile excitement, during which every physician was aware of the strong tendency there existed to the occurrence of visceral inflammation.

Dr. Condie could not call a remedy a stimulant which, like quinine, evinces so powerful an influence in calming the excitement of the nervous and vascular systems. Some years since, he was in attendance upon a gentleman of this City, who, during the month of August, went with a sailing party some miles down the river; on their return, the party were overtaken, in an open boat, with a heavy storm of rain. The gentleman alluded to returned home fatigued with incessant rowing for several hours, and every portion of his clothing saturated with water. He imprudently neglected to change the whole of his wet clothes, but threw himself down upon the sofa in the parlour with part of them still remaining on him, and fell asleep. The result was a severe attack of inflammatory rheumatism. Dr. C. saw him the ensuing day, and commenced at once an active treatment, comprising general and local blood-letting, nitre, calomel, and tartar emetic internally, and all the other remedies usually recommended in cases of the acute, inflammatory form of rheumatism. The disease, however, continued with very little abatement, and on the fifth day the patient was attacked with furious delirium, requiring the assist-

ance of several persons to retain him in bed. At this period of the disease, at the request of the patient's family, Dr. James Rush was called in consultation. The doctor at first advised the general bleeding to be repeated, and the nitrous powders with calomel to be continued, but upon learning the little effect they had heretofore produced, he consented, at the suggestion of Dr. C., to omit them, and try the effects of a cold infusion of bark, with serpentaria. A very strong infusion was prepared, of which the patient took a wine glassful every three hours. At the termination of twenty-four hours, the delirium was entirely gone; the patient fell into a sound, refreshing sleep, and at the end of a week, under the use solely of the infusion of bark and serpentaria, with an occasional purgative to keep his bowels in a free condition, was so far recovered as to be able to ride out. Some stiffness, swelling, and soreness of his joints still continued, and were only slowly removed under the use of frictions to the parts, and the use of colchicum internally. In this case the bark exhibited no stimulating effects; under its use, almost immediately, the delirium of the patient was calmed, his fever ceased, whilst the inflammation and intense pain of the joints were so far reduced as to permit of a considerable degree of motion. He should certainly not anticipate such results from the administration of a powerful stimulant.

Dr. Jackson remarked, that he was well aware that Haygarth, many years ago, recommended bark in the treatment of rheumatism, and that he had adduced some testimony in favour of its efficacy in that disease. But the inflammation in rheumatism is of a very peculiar character. Under the most active depletion it will continue with sizy blood, and this state of the blood will continue, bleed as often as you please; in remittent fever, the state of the blood-vessels is very different—it is more like what occurs in ordinary inflammation. In rheumatism, bark, quinine, and other remedies are given with benefit, though they could not be employed without danger in remittent fever. Administered too early—before a solution of the fever has been brought about—quinine will certainly have a tendency to aggravate the disease. Quinine, as a tonic and stimulant—not as an anti-periodic—is given in typhoid and typhus fevers advantageously, because of its stimulant and tonic powers; in these fevers, sedatives are not indicated; they would do harm.

Dr. Condie remarked, that he would waive any discussion at the present time of the curative powers of quinine in typhoid and typhus fever, but was desirous of calling the attention of Dr. J. to a disease, of the connection of which with decided acute inflammation there can scarcely be a doubt, in which quinine in large doses, early administered, has been found the most effectual re-

medy. Dr. C. alluded to yellow fever. He had recently read with great satisfaction the able report of Dr. Blair on the yellow fever, as it occurred in British Guiana. Dr. B.'s description of the disease corresponds precisely with that given by the best authorities of this country, as well as of Europe. But the most important point in this report is the evidence adduced in support of the efficacy of quinine in the treatment of yellow fever. Given in the very onset of the disease, Dr. B. views it almost as a specific, and in all the milder forms of the disease, a cure, he remarks, was almost invariably effected by a purgative, and quinine, pushed on to cinchonism. Thus confirming the recent experience of our own physicians on this subject. Here, then, we have a disease shown, by repeated careful examinations of the bodies of those who had fallen its victims, to be connected with decided inflammation of the œsophagus, stomach, and duodenum, promptly arrested by the administration of large doses of what Dr. Jackson pronounces to be a stimulant tonic—which cannot be given, according to his views, in any case in which there exists a tendency to inflammatory action, until that tendency is removed by an appropriate treatment. Dr. Jackson of course supposes that the curative powers of quinine in intermittent and remittent fevers are dependent upon its stimulant tonic properties; if so, how does he account for the same curative powers being exhibited in the same diseases by arsenic, which is certainly very far from being a stimulant?

Dr. Jackson has had no experience in the treatment of yellow fever by quinine. He is aware that it has been recommended in that disease by some of the physicians to the South, as has also been enormous doses of the same remedy in the early stage of intermittent and remittent fevers. Clark and Lind gave the bark in large doses during the hot stage of intermittents; the sweating stage was approaching, which carries off the stimulation, while the anti-periodic virtue of the medicine remains in the system. Dr. J. supposes that the constitution of the people in the Southern states, and in hot climates generally, is very different from that of the people to the North, and in colder regions; or perhaps the diseases may be so modified by climate and locality as to demand a treatment as they occur there, which would not be proper as they occur with us. In regard to arsenic, Dr. J. is aware that it will very effectually, though slowly, arrest the paroxysms of intermittent fever, and he freely admits that arsenic is neither stimulant nor tonic. We know not what are the peculiar properties upon which depend the curative powers of any of the numerous articles which are known to have the effect of putting a stop to intermittent fever; but we do know that such of them as are stimulant and tonic cannot be safely administered during the height of the fever, or until the system is prepared for them by a

proper preliminary treatment. In regard to arsenic, he would remark, that it was a most dangerous remedy, if its use be left to the discretion of patients or their friends. He has seen a whole family suffer severely from its poisonous properties; two out of six became paralyzed for some days; the others were œdematous, with a distressed expression of countenance, disturbed stomachs, and continued fever.

Dr. Meigs remarked, that the treatment of yellow fever by bark was no new practice. It was the treatment pursued in that disease previously to the epidemic of 1793. Dr. Rush, about that time, introduced the bleeding and calomel practice, which prevailed until the year 1825 or '26, when Dr. Daniel, of Savannah, Georgia, again directed the attention of physicians residing in yellow fever districts to the efficacy of bark and quinine, early administered, and during the period of febrile excitement. For the last four or five years, we have been furnished with numerous communications from practitioners of distinguished reputation, bearing testimony to the favourable results obtained from this plan of treating yellow fever.

Dr. Wallace was in favour of the early administration of quinine in remittent fever. Has, during the present season, seen many cases of the disease in the Neck. In one family three individuals were affected with it at one time. The symptoms in these cases were, intense pain of the head, back, and limbs, delirium, gastric distress, and vomiting, with a single exacerbation in the twenty-four hours. When first called in, Dr. W. gave a dose of calomel, followed in a few hours by castor oil, and on the ensuing day he began with quinine, in four grain doses, every three hours during the remission. Sixteen grains were thus given, and on the third day the patients were convalescent.

Dr. Evans was inclined to consider the action of quinine to be that of a sedative. He had long been in the habit of using it as a calmant in some cases of acute mania, when there was great nervous excitement, and the pulse accelerated; without, however, injection of the conjunctiva, or other symptoms indicating congestion of the brain. He has found that, in such cases, from eight to twelve grains of the quinine, three or four times a day, exerted a far more decided sedative effect than opium. In two or three hours after the administration of the quinine, sleep is induced, and the patient awakes in a more tranquil mood. He has observed that after from sixteen to twenty-four grains are taken, perspiration very generally occurs, the symptoms of delirium subside, and the patient will often take food. The immediate effect of the quinine in the cases alluded to, is an increased

rapidity of the pulse; in a short time, however, the augmented rapidity of the pulse diminishes, and it becomes, subsequently, slower than it was before the quinine was administered. In regard to the use of quinine in remittent fever, Dr. E. had never been able to obtain any decidedly good effects from the remedy when it was administered previously to depletion by the lancet or by purgatives.

Dr. Morris remarked, that he thought it quite possible to reconcile the conflicting views and statements on this subject. The common origin and great similarity of the symptoms of remittent and intermittent fever, would certainly justify us in considering them as but varying phases of the same disease, modified in the different cases by the different degree of impression of the morbific cause. This might arise either from the greater intensity of that cause, or the greater susceptibility of the subject exposed. Our remedies for this disease, evidently have some *specific relation to the cause*, of which, the nature is yet unknown to us. They owe their curative influence neither to their bitter principle, nor to their tonic properties, since many articles of the materia medica possess either or both of these, and yet exert no salutary influence on miasmatic disease, and at least one other anti-miasmatic remedy possesses neither the one nor the other. It is therefore but reasonable to assume that the same remedy which arrests the progress of the intermittent disease, will act equally kindly on the remittent form, since its effect is addressed to the common cause of both. In what is called remittent bilious fever, Dr. M. suggested the propriety of supposing that the cause operating with greater intensity, should be met with corresponding energy, and greater promptness of action. Dissection has proved, that in this form of disease, we are to expect certain visceral complications, which, when they are once established, exert a powerful influence on the symptoms and course of the case. The liver, especially, the spleen, and the stomach, occasionally, participate in this effect. If, before these complications are fairly established, we can neutralize the morbid impression, we may cut short the duration of the case. But allow the liver to receive the morbid impression, and the specific cure of the miasmatic poison becomes an irritant of the local disease, and aggravates the febrile disorder. We are then obliged to resort to the refrigerant and diaphoretic treatment, little effect as it produces in reality, merely to soothe and comfort the sufferer while the visceral disease is running its course; after which we resort to quinine or bark, not for its specific but its tonic effect, to restore the vigour of the system, which has been exhausted by the inflammatory action and by the remedies applied for its relief, precisely as we would after a pneumonia or other local inflammation. Under the influence of this view of the nature of remit-

tent fever, Dr. Morris stated that he had been in the habit of administering quinine freely, when called early to cases. He prescribed a dose of some mercurial cathartic, and followed it by the exhibition of quinine in doses of three grains, every hour or two, so soon as the least relaxation of the febrile paroxysm was manifest, whether the purgative had acted or not. If, however, the third day had passed, as is frequently the case, before medical aid is sought, this practice is no longer appropriate. He thought there was reason to believe that the operation of small and large doses of quinine was different. The small doses were tonic and stimulant, while the larger quantity certainly produces a different impression on the nervous system. He could corroborate the statement of Dr. Evans. Many years since, he was called to visit a young gentleman suffering from intense facial neuralgia, for whom he prescribed sixteen grains of quinine, to be taken in four doses, during the intervals of the paroxysm. So profound was the sleep which followed, with slow pulse and soft skin, that he was induced to call on the apothecary to ascertain whether he might not have made the mistake of ordering morphia instead of quinine.

While the subject of miasmatic disease was before the College, Dr. M. would state some circumstances that had passed under his own observation, which, though small in themselves, might add to the mass of facts which would ultimately enable us to solve the mysterious question of the nature of this fertile source of disease. The family of Dr. M. are in the habit of spending the months of summer on a farm, lying on the western side of the Chesapeake. The immediate shore is flat, the water salt, and numerous inlets from the bay intersect the shore, forming marshes, in which there is but little rise of the tides. The fresh water streams are few and small. Immediately on leaving the shore, the country which is alluvial, entirely destitute of any stone or rock formation, assumes a very broken character: and within five miles it attains the greatest elevation east of the mountains in the State of Maryland. In a small settlement at the steamboat landing, immediately on the shore of a large inlet from the bay, known as West River, no case of miasmatic disease has ever been known, while on the plantations immediately adjoining, and lying between that point and the bay shore, having entire identity of soil, the inhabitants are subject to mild intermittents in the months of September and October, with the usual tendency to vernal return. On the upland, the disease more frequently assumes the form of bilious remittent, sometimes very severe, and occasionally even congestive. The hill country is always the first to manifest the presence of miasmata.

The family of Dr. M. have always escaped themselves, with the exception of one year. On this occasion, himself and older children, with the man-servant, all of whom had been much exposed to the

sun during the summer months, left on the first day of September, at which date there was no disease in the family, nor among the servants employed on the farm. Mrs. M. and the younger children, and female servants remained three days longer; rain fell in the interval; every member of the family thus detained, six in all, was seized with some form of miasmatic disease, several of them with violent bilious fever, and others with very obstinate intermittent. Being females and children, they had been less exposed during the time the whole family was in the country, than those members who escaped. The inference therefore is justifiable, that the cause of disease had been suddenly developed after the first detachment had left the country. Whether this was under the influence of the rain, is a question which is open for investigation. There had been frequent rains during the summer, but a dry period of some weeks had occurred during August. The eastern shore of the Bay, which is at that place about fifteen miles wide, is proverbially sickly, and has always been so, as is proved by the correspondence between the inhabitants of the two shores of the Chesapeake, from an early period of the settlement of the State, in the possession of Dr. M.

Dr. Evans remarked, that he hardly thought the fact adduced by Dr. Morris, proved that the miasmatic influence by which a portion of his family were affected, was developed within the three days they remained at the farm, after those who escaped disease had left. There is nothing in the circumstance, as related by Dr. Morris, which should lead us to suspect that the miasm had not existed previously to the departure from the farm of the first five persons. We know that by the winds, the miasmata generated along the marshy borders of rivers may be carried to the high grounds situated some distance inland, where disease often makes its first appearance. It is more reasonable to suppose, in the case of Dr. Morris's family, that by the occurrence of a change of wind within the three days they remained after the others left, the miasm was brought to them from the hills, than to argue a sudden formation of miasm in their immediate vicinity. We know, too, that a certain continuance of exposure is necessary, excepting in particularly unhealthy localities, for the poison of malaria to induce disease. The location of Dr. M.'s farm is on the western shore of the Chesapeake, the direction of the prevailing winds would be from the inland hills towards the shore; this will explain why at the steamboat landing mentioned by Dr. M., a case of intermittent fever has never occurred, while on the hills back of the town, miasmatic diseases are prevalent.

Dr. Morris replied, that in regard to the suggestion that the miasm might be wafted inland from the marshes on the shore

of the bay and river, this could not be the case, as the prevailing winds were toward this point, and not from it. The shores are much frequented by seine-haulers and oyster-men, who assert that they escape disease, notwithstanding the very exposing nature of their occupation, unless they sleep on shore, which they sometimes do to escape the confinement of their small cabins; thus confirming the statements of Johnson in his work on Tropical Climates.

APPENDIX.

REPORT

OF THE

COMMITTEE ON PUBLIC HYGIENE.

By Dr. John Bell.

Part I.—Introduction: Read April 7th, 1846.

If we inquire into the progress of public hygiene at the present time, or within a recent period, we soon make the mortifying discovery, that little of scientific novelty has been elicited, and that there has been a still less fruitful application of existing knowledge to the improvement of the sanatory condition of the masses, or of those who from ignorance and poverty, most need the united aid of science and philanthropy. In justice, however, to the wealthy and the educated, they themselves cannot, on the score of hygiene, be called privileged classes; for they, too, suffer from a neglect of the unchangeable laws of public health. Knowing the necessity of pure air for the maintenance of respiration, and the changes in the blood, and the vitalization of all the tissues consequent upon the regular and complete discharge of this function, they still choose, when collected in numbers, whether it be in solemn worship, or in halls of legislation, or of science, or in festive and social meetings, to deprive themselves of this pure air, this *pabulum vitæ*, the grand renovator of the exhausted animal frame, by neglecting ventilation, at once a means for its renewal, and for the dispersion of that which had been contaminated by a mixture with impurities exhaled from the lungs and skin of those assembled. People learn the composition of the air, and yet consume its vivifying element in close and often crowded rooms, without thoughts of renewal from without; they learn the sedative and noxious effect of carbonic acid gas, and yet they have no misgivings in surcharging the air of the room in which they are assembled, or in which many of them pass their days and their nights, with continued exhalations of this gas, at every respiration. They will be found collected in large numbers to listen to the commentaries on the written revelations of God's will, and at the very time, are suffering in the close and over-heated air of the church, from an infraction of the natural laws established by

Him. They meet to assert their public rights, and often, while so doing, submit to a grievous infringement of their hygienic ones: while listening to large discourses on freedom and liberty, they are at the moment weighed down, enslaved, and deprived of the charter to breathe the pure air, with all its enjoyments. Science seems to be blind, or rather wilfully shuts her eyes against her own convictions, and yields health and comfort to the expediency of the hour, or to the exactions of avarice.

Even if it were to be admitted that public hygiene has been progressive, it is still very evident that its improvements and adaptations have fallen far short of the increase of population, and the multiplied requirements of civilized life; and in some essential particulars, a very little retrospective lore enables us to make comparisons between ancient times and our own, not always to the advantage of the latter. We may be slow to adopt the opinion of a late traveller and writer, that the Pyramids of Egypt were erected as a means of protection against the drifting sands of the desert, and that thus, while they secured more surface for agriculture, they warded off, at the same time, a powerful cause of disease. But we cannot fail to see, in the extensive and well-regulated system of canalling and embankment for the distribution of the waters of the Nile, adopted in the earliest period of history, not only a means for complete irrigation of the whole country, but also for guarding its teeming population from diseases which must have ensued from the neglected overflow of that celebrated river, now, as then, the source of fertility, and in a great measure, of the habitableness of Egypt. The ancient lakes of Moeris were great artificial excavations, the effect, if not original design of which, was to preserve the public health against the impetuous flow of the Nile at its rise, or the too persistent delay of its waters at its fall, and in either case, the needlessly exposed marshy surface, with its injurious emanations.

In the lofty contempt with which we regard Egyptian superstitions, we overlook the probably true origin of some if not most of them, as a means for preserving the public health, and preventing the devastations of endemic diseases. To this head may be refered the general practice of converting the dead bodies not only of men, but of animals, into mummies, and thus preventing their putrefactive exhalations, which must have otherwise been continually filling and poisoning the air, from the difficulty, not to say impossibility of securing deep and permanent burial for the dead in a land like that of Egypt, the soil of which is undergoing continual changes of surface, by the annual overflow and washing of the Nile. That this country must, in its period of prosperity and power under the Pharoahs, have contained an immense population, its own history, both written and monumental, to say nothing of the testimony borne by other people, and especially

by the Greeks, clearly prove; and that it enjoyed comparative, if not entire, exemption from the continually recurring pestilences of modern times, seems to be scarcely less certain. Such results could only have been reached by a wise system of public hygiene, and of medical police, of which the practice of mummifying formed an important feature. In this respect, the practical wisdom manifested in a regard for the health of the inhabitants of Memphis and Thebes, three thousand years ago, ought to serve as a grave rebuke to the boasted civilization of London in the nineteenth century. How gross, how disgusting, how hateful the scene of a London church-yard, compared with the order, the neatness, and tasteful arrangement in the vast Egyptian cemeteries. The first repels the approach of the living, and suggests the idea of, if they do not actually create pestilence; the latter invite the visiter, and direct his thoughts in the line of useful, if not pleasing meditation. On the walls of these cemeteries are seen pictures, to this day, of the trade or calling of the individual whose body is embalmed and deposited in the recess beneath; and paradoxical as it may seem, we acquire from an inspection of the chambers of the dead, their places of permanent sepulture, the best knowledge of the occupations, customs, modes of life, and domestic details of the ancient Egyptians. It was reserved for modern times, in which the doctrine of immortality is taught, for the dead to prove a terror to the living. Happily, better practices are beginning to prevail, and extra-urban or rural cemeteries are taking the places of burial-places in church-yards, and under churches themselves, not less for the improvement of public hygiene than for a better moral sentiment.

To sacred history, however, in the Pentateuch, must we look for the most complete and detailed enactments, enforced with all the solemnity and impressiveness of religious obligation, for the details connected with hygienic and medical police. Combining in himself, the offices of military leader, lawgiver, and conservator of the public health, Moses has set an example of vigilant attention to the dietetic and other hygienic observances of the people, which merits a closer imitation than it has ever yet received, in either ancient or modern times. Although it may have been deemed wise, that much of the Jewish ritual should be superseded under the Christian Dispensation, yet an exception might well have been made in favour of that part of it relating to hygiene, so far at least, as to have taken it for a model, if not as a binding code. In the minute directions for the examination and detection of leprosy, for the isolation of the leper, and the steps to be taken for the purification of persons and dwellings, we see a kind and prudent guardianship to protect the people against the spread of disease, while, at the same time, the infected are themselves properly cared for, which must shame many a Christian

government at the present day, for its loose and careless legislation, if not positive neglect, in reference to diseases avowedly contagious. The prohibition against drinking wine or strong drink, to be binding on Aaron and his sons forever, throughout their generations, when ministering in the tabernacle, ought to have been perpetuated from age to age, in the case of all orders of the Christian priesthood, for the preservation of their sanctity, and the honour of the church. As a sanatory measure merely, there is nothing in all profane history comparable to the enactment, that one day out of the seven should be set apart for rest, both of man and beast, from labour.

For a formal inculcation and regular practice of systematic and varied bodily exercises, regarded as a part of education, we must look to ancient Greece and Rome. The gymnasia and palestriæ were resorted to by persons of all ages, and it should be added, of all professions and ranks, in order to acquire and maintain that vigour of frame and agility of movement so necessary for the citizens who were expected to be ready, at all times, to defend the republic from hostile invasion, or intestine attacks. Regarded as a measure of military hygiene, these exercises may fail to command our admiration, but in their bearing on health, and in their alliance, as was so commonly the case, particularly in Greece, with philosophy and literature, we find ample cause to commend, and to wish that they were made once more a part of education by the State. How far the gymnic arts have been imitated in our own day, will perhaps engage our attention on a future occasion.

The practice of bathing, as a means of hygiene and personal comfort and luxury, was common, we might say general, among the Greeks and Romans; the government, especially in Rome, supplying the want of ability in the citizen to procure this gratification, by the erection of public baths of vast extent. Adjoining these were palestriæ, so that active exercise should precede bathing, or in certain cases follow, according to the requirements of the individual's health. A powerful auxiliary to the pleasurable and hygienic, as well as sanative effects of bathing, but almost wholly neglected in Europe and America, at the present time, was active friction, and subsequent annointing of the entire surface; by the former of which, greater activity is given to the cutaneous capillary circulation, and by the latter, the liability to be injuriously impressed by sudden changes of temperature was diminished. At no time before or since, has the salutary union between mental and bodily exercise, been so fully recognised, as in Greece and Rome, where the gymnasia and baths were resorted to, alike by the philosopher and the soldier, the youthful aspirant for fame, and the staid citizen. Often the same persons might be seen passing from the instruction of the professed ath-

letæ, to the lessons of the sages and orators, in the lyceum and the academy; thus, while they secured to themselves health and a bodily vigour, which should enhance their personal enjoyments and civic usefulness, as defenders of the state, they acquired, also, those accomplishments that give virtue and dignity to the individual, and by reflexion, on his country and age. However much we may choose to overlook this connexion between mental and bodily purity and health, it is not less a portion of natural law, and if true of the one, it is equally so of the many, and if true in private, it is *a fortiore* more valid still in public hygiene. When the historian speaks of fermentation among the masses, the poor, the dissolute, and the reckless, in a city or state, his language is figurative, and he may very appropriately add that this tendency to outbreak and disorder is kept up, if it be not in a great degree produced, by physical deterioration and taint; by impure air causing bad blood and disordered brain, added to filth and food continually irritating the nervous system, and giving rise to a host of abnormal sensations. It is no straining in causation, to say, that sickness or disorder in the body politic is often the manifestation, as it is the effect, of a neglect of public hygiene. So also, beyond all doubt, have nations been driven into war, with its ever-attendant horrors and atrocities, owing to the dyspeptic condition or splenetic humours of princes and ministers of state. We need not indulge in far retrospection, nor consult foreign history, to learn how the dignity of the country and its peaceful relations, have been perilled by the drunken speeches of its legislators. The murder of Clytus has been paralleled in thousands of cases, without the chief actors having acquired the fame, or been placed in the irresponsible position of an Alexander.

In ancient Rome, the importance of continued and watchful attention to the public health by the state was evinced, in an eminent degree, in the appointment of ædiles, whose comprehensive jurisdiction embraced the supervision of not only public buildings, temples, theatres, &c., and private edifices, that they should neither endanger nor incommode passengers, but also baths, aqueducts, common sewers, direction of the markets, and houses of public resort—taverns, as we should call them at the present day—and who took care that the health of the people should not suffer by bad provisions, which they threw into the Tiber, nor their minds by bad women, whom they had authority to banish from the city. The number, length, and elevation of the Roman aqueducts for carrying water from great distances, for drink, bathing, and cleansing the streets, &c., have never been equalled; and such was the value put upon this supply as a means of pleasurable sensation and health, and even for mimic naval battles, that officers, in addition to the ædiles, were espe-

cially appointed to take care of the aqueducts. These *Curators Aquarium* were invested with considerable authority, being attended without the city by two lictors, three public slaves, an architect, secretaries, &c. After reading the account given by Strabo of the quantity of water introduced into the city being so great that whole rivers seemed to flow through the streets and sewers, as a contrast turn over the pages of the official reports in England, showing the lamentable deficiency in this respect, both in the capital and most of the great and small towns of that country, so that hundreds of thousands are deprived not only of an adequate supply of water for washing their clothes and the purposes of personal cleanliness, but also for drink itself. The only fountains to which they have access are those of liquid poison; the only edifices to rejoice their eyes, and to which they may claim entrance by spending the pittance earned by their daily toil, are gin-palaces.

How few Christian rulers care to manifest the same regard for the health of their subjects with that displayed by Augustus, when, in reply to a popular clamour about the dearness and scarcity of wine, he issued a proclamation, reminding the people "that no man could reasonably complain of thirst, since the aqueducts of Agrippa had introduced into the city so many copious streams of pure and salubrious water."

Down to the present day, the city of Rome is conspicuous for the quantity of water brought by three remaining ancient aqueducts, which is adequate, not only to meet all the wants of the citizens, but to supply fountains of such magnitude that they seem to be the origin of rivers, rather than of the miniature jets seen in so many other cities.

But still more wonderful, by their size, extent, and number, were the underground conduits or sewers, some of which, as the Cloaca Maxima, rival the Pyramids in their solidity, while they surpass them by their unquestionable utility. Pliny, in his Lectures, expressed his astonishment at the stupendous character and durable construction of the great trimural cloaca. Now, at the expiration of eighteen centuries more, it is still seen emptying its contents into the Tiber—an enduring monument of the attention of the government of Rome to public health, long before she had achieved dominion or became the mistress of nations. Let it be added, that with the extension of her rule was that of her institutions, among the most beneficent of which were those of an hygienic nature. Acqueducts and public baths were erected in the conquered provinces, in a style of grandeur scarcely inferior to those of the capital. The acqueduct, the remains of which are still standing at Nismes, in the south of France, must have exceeded in altitude and architectural labour and display any of those at Rome. In modern times, and under, in so many other

respects, an improved dispensation, we do not see the conquerors bear such gifts to the vanquished. It may perhaps be alleged that they ought not to be blamed for not transferring to others advantages which they did not enjoy themselves; for if the colonies of England, and France, and Spain have been little benefited by the hygiene of the mother countries, so neither have the cities, towns, and villages at home; unlike, in this respect, the Roman colonies, which were, for the most part, miniature copies of the great city itself in all that related to their civil and domestic polity.

Under the veil of superstition, the Romans, on occasions, concealed a close observation of the knowledge of proper localities for the sites of a new city, or even an encampment, as when their soothsayers inspected the entrails of animals, in order to discover the propitious augury that would indicate the pleasure of the gods respecting a suitable spot for the new settlement. They did not indulge in speculations about miasmata; but they learned, from the appearances of the viscera of the herbivorous animals belonging to and living in a particular region, the probable influence of the air, water, and soil on the living organism, and were enabled, in consequence, to make nearer approaches towards ascertaining the conditions for the preservation of health and avoidance of disease among their people, as far as locality was concerned, than modern speculators, with all the collateral aids and analogies supplied by chemistry and pneumatics.

Whatever may be the general opinion on this point, certain it is, that in the foundation of cities in modern times, health has been a very secondary consideration, and scarcely mentioned at all whenever the spirit of commercial cupidity was awakened. How terrible the mortality, how great, often, the subsequent expense incurred by an oversight, or worse still, wilful neglect, of considerations of public hygiene, by the few projectors and founders of most of the great cities which were intended to be emporiums of trade.

The period which may be considered as midway between ancient and modern times was remarkable for an event which, more than any other recorded in history, has influenced the hygienic observance of a great many nations, in a large proportion of the human family, for the last twelve hundred years. We refer to the prohibition of wine, as the representative of intoxicating drinks, by Mohammed to his followers. A witness to the effeminacy, drunkenness, and consequent degradation of the people of the East, both Christians, as they were called, and Pagans, he knew the difficulty of carrying out enterprises of pith and moment, such as was his own stupendous scheme of mingled fraud and undoubtedly beneficial reform, unless by an entire change of habits. His keen perception of character, and espe-

cially of the character of the people of the East, taught him that, from time immemorial, common exhortations and legislative enactments, even if he had then possessed worldly authority, would have been inefficacious without the enforcements of religious obligation. To this, in his assumed and fictitious, but yet credited, office of prophet, he had recourse; and accordingly he made it a part of the creed of his disciples and followers, to be binding on their latest posterity, that they should strictly abstain from the use of wine. In the same sentence in the Koran, he prohibits games of chance. The language of Mohammed on this occasion would bring no discredit on Christian morals, if it were a recognised part of their code: "O true believers," as we read in the Koran, "wine and games of chance are an abomination of the work of Satan; therefore avoid them, that you may prosper. Satan seeketh to sow dissention and hatred among you by means of wine and lots, and to divert you from remembering God, and from prayer: will ye not therefore abstain from them?"

It belongs not to our present sketch to inquire into the extent of breaches of this antivinous decree, either by the prophet himself or by his believers in subsequent times. The main point for consideration is, the undoubted compliance with it both in its letter and spirit by a vast majority of Mohammedans, who, it is known to us, are inhabitants of nearly every variety of climate, and whose personal prowess and valour in the field of battle, and patient endurance under fatigue of all kinds, attest the fact, that abstinence from wine and its kindred liquors neither abates the enterprising zeal nor the physical strength of those who practice it. Never was the career of conquest so rapid and so extensive as during the eighty years that followed the death of Mohammed. The crescent waved at this time in triumph from the confines of India to the shores of the Atlantic, and from Samarcand to Cairo; over, in fact, a greater extent of territory than the Roman eagle was ever allowed to be carried. Everywhere conquerors, and successful not more by their bravery than their superior skill, the Mohammedans set an example of military hygiene which it would have been happy for mankind if their enemies had imitated. How different a picture would faithful history have given of the results of campaigns, undertaken in all parts of the world by Christian princes and governments, during the last five centuries; aye, during even the period that has elapsed since the discovery of this continent!

Not less encouraging and beneficent, in an intellectual point of view, were the dietetic restrictions imposed on the Musselmans by their prophet. At a time when the rest of the world was shrouded in barbarism, or possessed no literature beyond monkish legends, the Arabians, under the successors of Mohammed,

employed themselves in collecting and diffusing it; and the two dynasties of rival califates at Bagdad and Cordova, the first for Asia, the second for Europe, carried on for a long time a noble contest in the cultivation of the arts and sciences, foremost of which were mathematics, chemistry, and medicine.

Worthy of commemoration and praise, also, was the injunction of Mohammed to practice ablution daily, and the promise of a future reward to him who erected a fountain by the wayside, or otherwise procured the means for the traveller in the desert to slake his thirst with pure water. This was truly a feat of Mahadi, the son of Almanzor, in his erecting cisterns and caravansaries along a measured road of seven hundred miles, from Persia to Mecca, on the occasion of his pilgrimage to the latter city. In no other part of the world, even at the present day, are the sanitary and luxurious indulgences of the bath, in all its varieties, so general and so accessible to all classes, as in the East, among the people of Islam, whether it be in Turkey, Persia, or Egypt. Cordova, in the flourishing period of the califate, could boast of nine hundred baths. By none are the lavish use of water, and its ornamental distribution, by richly-sculptured fountains, and basins, and cascades, so highly prized as by them, however different their origin and national tastes in other particulars. Their palaces and mosques were furnished with capacious cisterns, and in most of the principal cities fountains played in the streets, as well as in the courts of houses, by which the atmosphere was attempered during summer.

Among the Mohammedans, the more orthodox, as in the case of the rigid temperance reformers of our own day, extended the inhibitions against intoxicating liquors to opium, tobacco, and coffee; but at present, these articles, and haskish and beetel, or the leaves of hemp in pills or conserves, which come under the same category, are not merely tolerated, but used without any religious scruple whatever.

In the proscription of the use of the flesh of different animals for food, which are pronounced to be unclean, Mohammed followed, but with less extensive interdiction, the example of Moses. The flesh of swine is prohibited in both catalogues, and doubtless for the same reason, viz.: their filthy habits, and the grossness of their flesh, which, in warm countries, as in Arabia, Syria, and Palestine, is generally believed to render those who use it liable to cutaneous and other diseases. The force of this objection would, however, be, in a great measure, if not entirely, destroyed by the flesh of the hog being salted and smoked. We may, after all, fairly presume that both the Jewish and the Arabian lawgivers, in this prohibition, and in the restricting so much the list of animals which were considered clean and fit to be eaten, had in view not only what was required by public hygiene, but also

a subjugation, or at least restraint, of appetite, and habits of self-denial, rendered the more easy by the stern denial at once of the temptation.

Mohammed, conversant as he was with the sacred Scriptures, may also have felt himself more emboldened to prohibit, at once and for ever, the use of intoxicating beverages, after reading the recognition by Aaron of the practice of total abstinence among the Nazarites as part of their vow, and a similar course, in this respect, at a later period in Jewish history, pursued by the Rechabites. The prophet Samuel, Samson, the mighty man of Israel, and John the Baptist, were Nazarites from birth. If we may credit the accuracy of the Rev. Joseph Wolfe's observation, he met with, in his travels in Mesopotamia, descendants of the ancient Rechabites, who still adhere to the vow of abstinence of their fathers.

It may as well be mentioned in this place, without our pretending to give a connected view of the obligations of public hygiene to Islamism, that in one essential, and indeed paramount particular, that of furnishing abundant and varied food by successful agriculture, the Arabs, especially as they spread themselves beyond the confines of Arabia, made the greatest progress. It has been said, and no doubt truly, that no civilized nation of their time possessed a code of husbandry more judicious and more perfect. They understood and practised the adaptation of plants and nutritive grains and vegetables to climate and soil, and were greatly skilled in horticulture. To the Saracens, Europe is indebted for the introduction and use of olives, oranges, and the sugar-cane, and also a variety of fine fruits and vegetables now considered indigenous.

With such resources, derived from the cultivation of the soil, we can the better understand how a great but not redundant population was supported in regions in which, at the present time, a fifth of their numbers procure but a bare subsistence. The population of the small but rich and powerful kingdom of Granada, under the Moors, is said to have amounted to three millions of inhabitants, being five-fold more than the province of the same name now contains. If I advert to details of this nature, it is to show that the study of history assumes new interest and value in connection with public hygiene, since it makes us acquainted with the fact, it may be called a law, that between the prosperity of a nation, as based upon a development of its agricultural and industrial capabilities, and the public health, there is a close and even intimate relation; so that one gives an adequate measure of the other.

The downfall of the Roman empire, by the irruptions of the barbarians, bringing with it a destruction of former social and political institutions, was followed, throughout Europe, by inter-

rupted agriculture and decayed commerce, to which succeeded a diminished and destitute population, and wide-spreading and destructive epidemics. There was no longer any medical police, nor the commonest attention to public hygiene. When to seize and to destroy was the practice, how, indeed, could it be expected that any conservative jurisprudence should be cultivated! But so has it ever been, so will it ever be, when wars of conquest, or long wars of any description, are carried on. Famine and disease, physical and moral deterioration, follow in their train. The calamities induced by the German and Schythian nations overrunning the Roman empire lasted for five centuries; and up to this time it were vain to talk of public hygiene. No longer were ædiles and quæstors to be found, nor were similar officers created by the barbarian conquerors. Even after the outlines of a new order of things were visible, and modern history begins its records, a long time elapsed before any pains whatever were taken to preserve the health of communities by sanitary regulations. The cultivators of the soil, herding, rather than dwelling, together, around the castle of their lord and tyrant, were badly fed and worse lodged; and both in town and country the purifying aid of the bath ceased to be sought for,—in fact, was no longer procurable. The dawn of a brighter day was first seen under the direction of the monks, to whom, says Mr. Hallam, we owe the restoration of a great part of Europe, by means of their attention to agriculture, and the kindly assistance and patronage which they extended to the rural population, a portion of which afterwards laboured with and for them, and held lands as tenantry under them. Horticulture, whose operation on the public health, by the variety and abundance of garden vegetables and fruits which it introduces for food and refreshment, is not appreciated at its full value, was carried farther by the monks than by other classes.

The next memorable step towards a better social and political reorganization of the devastators and conquerors of the Roman empire, in Europe, was the collection of people into commercial communities. Ingenuity, enterprise, and taste were developed in them; and with increase of the wealth of the state, new facilities for the gratification of these, ensued greater individual comfort and enjoyments—better means, in fine, of preserving health and avoiding disease. To huts and dark and unwholesome habitations, succeeded spacious, if not always well-aired and well-lighted, mansions—avenues obstructed by mud and filth were replaced by paved streets, and here and there a fountain gave evidence of a recognition of the virtues and pleasure of running water, and of the probability that abundance for use was secured before ornament was indulged in. But this ameliorating progress was chiefly observable in the free cities of Germany and Italy.

Others, even the capitals of powerful kingdoms, such as London and Paris, until a comparatively recent period, were destitute of most of the essentials for the preservation of public health. The streets were narrow and unpaved, and with their own mud was mixed up all kinds of garbage and offals; the houses were for the most part small, damp, and badly ventilated; water, for both public and private wants, household and personal, was deficient in quantity, and when procured often tainted with impurities. The supply of food was irregular, and never in that variety required for the purposes of health. In all the cities of Europe, during the middle ages, the population was excessive, owing to the insecurity of person and property outside the walls, in their frequent and almost continual wars, or to large numbers from the country flying before the sudden fury of a barbarous enemy. It mattered little whether the town was large or small, the same disproportion existed between the number of its inhabitants and the space and room for habitation and change of air. Hence, we cannot be surprised that any notable deviation from the customary states of the atmosphere, or, still more, interruption to the regular supply of food, should have been followed, in city, town, and hamlet, with pestilence in its most appalling and deadly features. Even if we were ignorant of all the particulars of the bad medical police, or its entire neglect, and of the mode of living of the people during this period, we still could not fail to see in these melancholy chapters of epidemic diseases, a want of adequate public hygiene, if not a total ignorance of its principles. In proportion, on the other hand, to a better appreciation and practice of these latter, will be an abatement, if not disappearance, of the former. By slow and uncertain steps most of the countries of Europe have advanced in sanitary legislation and public hygiene, and are now enabled to speak of epidemic visitations as historical, the like of which, in other regions, in the East, for example, are matters of continual occurrence, because ignorance and mal-practice, in most of what relates to hygiene, are still prevalent. The difference, in one particular alone, between, for example, London and Cairo, will show the advances made in the former and the stationary condition, if not retrogression, of the latter. It is estimated that one citizen of the first mentioned city occupies more space than twenty citizens of the latter. The remark may be extended to say, that the countries under Turkish rule, from which Egypt has but recently been freed, and those of Europe have changed characters; so that while the latter have advanced, the former have retrograded, in respect to cultivation and the arts of life.

Of the slowness of progress in domestic architecture, on which not only the comfort but the health of the people so much depend, we gain some idea by learning that the use of chimneys and glass

windows in England and France was not common before the middle of the fourteenth century. The walls of even gentlemen's houses in the fifteenth century were commonly bare, without wainscot or even plaster, except that some great houses were probably furnished with hangings. Cottages in England consisted generally of a single room, without division; stoves and chimneys were unknown in such buildings until the earlier part of Elizabeth's reign. To this period, also, must be referred the introduction of the esculent vegetables now in use. Bearing immediately on our subject is the fact stated by Hallam, (*View of the State of Europe, &c.,*) that three or four centuries ago a labourer in England was better able to procure good food for himself and family, viz., wheat flour and meat, from his wages, than one is at present, however much the latter derived benefit from the cheapness of manufactured commodities, and from many inventions of common utility.

It would be creditable to the present age of progressive civilization, and speak well of its considerate philanthropy, if we could, while boasting of the improvements of cities, in wider and better paved streets, and in greater attention to sewerage, claim for all parts of them entire exemption from the causes of sickness and pestilence which used so commonly to prevail in former times. But, in addition to the revelations made by patient and faithful medical observers and statistical inquirers of the still fearful extent of privations, and consequent diseases, to which a considerable part of the population of almost every city, not excepting those of the United States, is exposed, we have had, within a few years past, striking and alarming proofs of the still defective civic hygiene, in the attacks and mortality of epidemic cholera, which, by a kind of affinity, has so generally lighted on the worst parts and the worst provided of the population of the cities and towns visited by this terrible pestilence.

Nor is greater encouragement afforded by a comparison of the state of the rural population in the United Kingdom (Great Britain and Ireland) at the present time, with what it was in the period just now adverted to, when domestic architecture was so poor. The reports of the Poor Law Commissioners exhibit a condition of things, particularly in England, where the investigations have been made more in detail, among the colliers and labourers of the soil, adverse alike to health as to delicacy and morals. These reports, together with those on the sanitary condition of great towns and populous districts, will furnish us with ample materials for exhibiting the causes and extent of the existing evils in both town and country, and the prominent suggestions as to the means of their removal and prevention. This exceedingly instructive part of our subject will be presented to the College in a subsequent report. In completion of the present one,

which is mainly retrospective, we would make a few remarks on the more influential causes, both as regards intensity and geographical range and extent, which have modified the public health in the civilized world within the last two centuries.

During this period, the consequences of discovery, colonization, and conquest in the East Indies, and in this our Western Hemisphere, have become evident, and exerted a powerful influence on the political and social relations of the world, from which neither Chinese nor Hindoo, Turk nor Tartar, Indian nor Negro, have been exempt. Consequent upon this vast extension, and the opening of new channels of commerce, has been the foundation and rapid growth of many cities, the inhabitants of which, in their eagerness for gain, have hardly allowed themselves, until recently, time to attend to the more obvious requirements of public hygiene; and hence, both on the eastern and western continents, and in Europe itself, a neglect of proper draining and sewerage and deficiency of water, and, more surprising still, of ventilation, have been productive of febrile and other diseases, which have not only destroyed life to an immense extent, but retarded industry, and greatly interfered with social progress and educational amelioration. These evils are not confined to Calcutta and New Orleans, to Cairo and Constantinople: they are but too apparent in New York and Philadelphia, as they are also in Liverpool, and Manchester, and Glasgow. Little admonished by the history of former ages, the people of Europe and America, up to the present time, have too much neglected the means for preventing diseases and preserving health among the masses; the poor, and the destitute, and the degraded have been too long allowed to rest in their ignorance, to grovel in their filth, and to spread around them the contamination of the diseases of body and mind inevitably resulting from their neglected position. The philanthropic few have, from time to time, remonstrated, and suggested improvements; but the former were scarcely listened to, and the latter were too partial in their nature to prune even, still less to eradicate, the wide-spread evil. The plague on the Eastern continent, yellow fever on the Western, and typhus fever in Europe, have spread fright and death through many cities, have elicited legislative enactments, and brought out traits of heroic devotion to the relief of suffering humanity; but until recently they failed to fix the attention of the several communities among which they have been most rife, on their real causes, and these ascertained, next on the means of prevention. It is under such circumstances that Hygeia, declared to be the handmaid to Medicine, may become the leader, and save with ease and pleasure her tens of thousands of lives, while the latter boasts of rescuing, after incredible efforts and exposure of her immediate votaries, her hundreds.

In the period of which we are now speaking, the extended intercourse of the different maritime nations of the world with one another, and with their colonies and remote dependencies, for the purposes of trade and emigration, called into existence a commercial marine, and on which has been engrafted naval forces, both of them without parallel in any former age. A large class of men distinguished by many peculiarities, and subjected, of necessity, during long voyages and cruises, to great vicissitudes of climate, and restricted to a limited supply of food of the same unvarying nature, have thus been formed. Their manner of living when at sea, constitutes the subject of nautical, a new branch or measure of public hygiene, particularly prolific of valuable inferences in dietetics and acclimation. Notwithstanding the necessity of the services of sailors, in the work of discovery, colonization, and commerce, they have been too generally looked upon as mere machines, to be used until worn out, and then cast aside, without regard to their former sufferings and present disability. Or, if their humanity was admitted, it was supposed to be of a strange hybrid kind, between man and monkey, and to furnish matter only for amusement and ridicule. Whether at sea, or on shore, their life was a peculiar one; the former full of privations and hardships, the latter, of temptations and vices. Sad havoc used to be committed among them by scurvy and fever on board ship, and by syphilis and fevers on shore; the poison of ardent spirits being measured out to them in the one case, and ingurgitated to repletion in the other.

At length, however, a better understanding has begun to prevail, of the rights and claims of this class of men, and now that they are insured dry quarters, and a more varied aliment at sea, and since pains are taken to engage their feelings and minds pleasurably and instructively, they cease, in a great measure, to be victims to scurvy, even during and after the longest voyages; and with some exceptions of tropical causes, they have, also, little to dread from fevers. On land, a benevolent guardianship is now exerted in their favour, and they are procured exemption, in no small degree, from those causes of disease and vice under which they used to suffer.

Concurrently with the increase, and both as an effect and a contributing cause of commerce, has been that vast extension of, and multiplication of manufactures, within the last century, and the concentration of human beings, in consequence, far beyond what would be allowable on any principle of hygiene. Deprived, as so many tens of thousands are, in the great manufacturing cities and towns of Great Britain and France, of the common air, and common light, pent up in close and damp, often underground lodgings by night, and forced to extraordinary, and yet partial bodily efforts by day; receiving inadequate supply of food, and

tempted by their overpowering feelings of exhaustion and depression, to seek for temporary renovation and excitement, from ardent spirits, or drugged, fermented, erst called malt liquors, what wonder that they are invaded by disease in every form, fevers, consumption, scrofula, and all that can disfigure and deform. The picture is a gloomy one, and suggestive of fearful forebodings; it has long enlisted the sympathies of the benevolent, and has, at last, even startled the selfish and the avaricious, who feel a well-grounded alarm, that the continued sufferings and degradation of a despised class of their fellow beings, may diminish their own gains. But let us not scrutinize too closely motives, if the acts be of an ameliorating and kindly nature. Already, enlightened public spirit is urging those who have the power, to make the requisite reforms, and both in legislative enactments and in voluntary association, and individual liberality, satisfactory proofs are given of the approach of a new and better state of things. In some of the towns of England, of late years, grounds have been opened and planted, and set apart for public recreation, public baths are about to be opened, public wash-houses are in course of erection, so as to insure to the poorer classes, cleanliness of persons and of clothing, two great means of preserving health, and indirectly of aiding the cause of morals, the mind receiving from the body's purity, a secret sympathetic aid.

He who would sketch, however slightly, the history of public hygiene during the last two centuries, might not omit to notice two dietetic usages, of a counteracting and almost antagonistic nature, that have been generally adopted among the people of the civilized world. Our reference is to the consumption of intoxicating liquors, especially ardent spirits, for drink, and to that of the potato for food; the former as deteriorating and destructive to health, as the latter is recuperative and salutary. Drunkenness, a common vice in all ages and countries, never exhibited itself with such frequency and repetition, and never so completely infected all classes and callings, sapping almost the foundation of national prosperity, and giving new and fearful power to the causes of epidemic and endemic disease, and itself originating many others, as after the general introduction into common use, of distilled intoxicating liquors. Wherever the arms and arts of the European were carried, there vice was a sure attendant, and contributed more than war with the stranger, or with each other, to the destruction of the aboriginal inhabitants. At sea, and on shore, in the palace and the hut, among wise men and pious men, by the strong and the weak, the healthy and the sick, by the mother after giving birth to her child, and the infant, almost mixed with its mother's milk, ardent spirits, in some form or another, was drunk. Its use promised to abate the severity of the winter's cold and the summer's heat, to protect against disease, and

to diminish the dangers of acclimation. But alas! this liquor of life, as it was even called, thus proved to be its bane and destroyer, filling hospitals and alms-houses, and adding a hundred fold to the risk of diseases incident to emigrants to foreign lands, and settlers in hitherto uncultivated regions. As no rank, nor age, nor sex, nor religious, nor moral endowment abstained, habitually, from its use, so none of these was exempt from the corporeal and mental diseases and ills attendant on such use. Everywhere were the hygienic usages of people modified for the worse by its introduction; and although sometimes the physiologist, with Haller, would show that it was injurious to growth and vital activity, and the physician, with Trotter and Rush, that it was productive of many diseases, still the practice of using it became, from year to year, more general, until the physical and moral ruin of mankind seemed to be rapidly approaching, and barbarism worse than Gothic or Vandal should overshadow all. Happily, the remedy of total abstinence has been found, and is in full and beneficial operation in our own day, and still more, as a matter of patriotic boast, in our own country, and may we not add, without boast, it has been made more powerful and diffusive, by the advice and example, the discoveries and the writings of our own profession.

It is now a little more than a century and a half (162 years) since the Potato, indigenious to Chili and Peru, was first planted in the open fields in Lancashire, England, and subsequently in Ireland and Scotland, and thence into the Netherlands, and by slow degrees into France, Germany, and Switzerland. Now it constitutes the chief part of the food of the people of Ireland, and enters largely into that of the rest of the United Kingdom, and of Belgium, parts of Russia, and other Electories of Germany, and also of Poland. Its cultivation and use are extending in Italy also. Truly has it been said by Mr. McCulloch, "So rapid an extension of the taste for, and the cultivation of an exotic, has no parallel in the history of industry; it has had, and will continue to have, the most powerful influence on the condition of mankind." In the United States, potatoes as we all know, are cultivated to a great extent, and form a regular part of the daily food of a vast majority of the inhabitants.

It is a matter of curious philosophical, or perhaps we should rather say philanthropic inquiry, to examine the progress in Ireland, of the two antagonistic forces of a dietetic nature, of ardent spirits and of potatoes; the former tending to keep down and to diminish, the latter to augment population. The trial has been full and general for the last century, in that unhappy country, and has resulted in the triumph of the potato over the still, as far at least, as population is concerned, and justifies the remark of Mr. McCulloch, that the population of a potato-feeding country may

become, *other things being equal*, from two to three times as dense as it would have been, had the inhabitants fed wholly on corn.

With a knowledge of these facts respecting the nutritive value and geographical range of the potato, we can well understand the fearful consequences, not merely to communities, but to nations of a deficient crop of this esculent root. Such a catastrophe has now occurred in Europe, and gaunt famine and fell disease are already abroad among the people. It is yet too soon, nor could it perhaps be expected of your committee, to investigate the causes of this blight, this epidemic pestilence it may be called, among the potatoes in nearly all parts of the world.

In conclusion of the prominent dietetic usages in most parts of the world at this time, notice is properly due of tea and coffee, as beverages. But as the limits that your committee had proposed for this introduction to the detailed views of a practical kind, that will engage its attention hereafter, have been reached, if not passed, it must ask leave to pause at the present, with the expression of a hope that in the retrospective view which has been indulged in, the connection between the past and the present has never been lost sight of, nor a lesson omitted which should suggest improvements for the future.

PART II.—Read Sept. 17th, 1850.

In directing our attention to the advances made, within the last few years, in the study and useful application of Public Hygiene, we find much cause for gratulation, at the same time that the very knowledge acquired, renders the remaining ignorance and neglect of the subject more conspicuous than ever.

While philanthropy incites to more extended efforts for the relief and prevention of sufferings which are the result of a breach of the natural laws, or those of health, expanded philosophy teaches that, although some classes in the community pay the heaviest penalties, yet some classes are exempt from similar inflictions. The rich man, in his spacious mansion, has a direct personal interest in the health and domestic comfort of his poor neighbour; and the more secluded and shut out from the world, in a dark court or alley, or even in a cellar, is this neighbour, the greater is his interest. His open windows will give entrance not only to the refreshing breeze, but also to the poisoned air emanating from congregated beings in the confined lodgings, and from the unremoved refuse or offal in an adjoining court or alley. It is thus that typhus fever, begun in the hovels of the poor, finds its way into the luxurious abodes of the rich.

State policy itself, however little affinity it may seem to have with philanthropy and philosophy, is concerned in the enforce-

ment of the true principles of hygiene. The power of a state depends on the population, wealth, and productive industry, and intelligence of its people, trammels to all of which are erected by a deterioration of the physical energy and health of any portion of them. Whatever affects the public health in any permanent manner, exerts, at the same time, an unfavourable influence on the social state, and hence poverty, with its concomitants of hunger, and daily alternations of irregular excitement, and depression of the senses and feelings, has ever been a promoter of social and political disorganization.

Even as a matter of political economy, crimes are injurious to the state; and it is well known that those from intemperance and the indulgence of vicious propensities, are fostered by a low grade of physical comforts, which, again, are adverse to full and regular health. In most large towns, certain districts are not only the seats of disease, but, also, of crime. A wise system of public hygiene, enforced by the public authorities, with the active aid of the intelligent and wealthy part of the community, would go far to prevent both disease and crime, both physical and moral ills and deformities, and, at the same time, save the public treasury an expenditure of large sums for the cure of diseases, and the punishment of crime. In thus speaking of the preservative influence of public hygiene, we admit its connection with morals and religion. Vain will be the teachings of the latter, unless the mind be relieved from the goadings of hunger, and the disturbing effects of a close and impure air, and personal filth. A school and a church are little better than mockeries, unless they allow of seats and ventilation for the scholar and the worshipper, and are in alliance with other agencies for the ensuring of personal cleanliness and decent attire of all who resort to them. The simpler and more obvious hygienic conditions must be complied with, before education of any kind can be available for the purposes anticipated by its friends.

So soon as people are congregated in cities and other marts of business, they discover the necessity of coming to a common understanding of the necessity of giving up the indulgence of individual will, when it conflicts with the general good. Hence municipal laws for the regulation of the requisites of thoroughfares, of the introduction and export of the various articles of commerce, whether the product of agricultural or mechanical labour. Every citizen is insured the right of way through all the streets, in the pursuit of business or of pleasure, and is protected by stringent laws from the dishonesty of those who would sell him tainted meat, or even good provisions at short weight.

Individual caprice and heedlessness are restrained from displays which conflict with the rights of the many, as when a person cannot extend the front of his house beyond the regular line,

or pile up his goods or wares in the middle of the street. It would be well that some limitation should be put to the height, as there now is to the projecting of the front of a house, in order that a whole neighbourhood may not be put in jeopardy, or actual loss of life or limb, by the fall of those lofty structures which are neither dedicated to religion, nor public use of any kind, but seem to be merely monuments of the silly vanity of individuals. The exclusion of the cheerful sunlight, and the restricted ventilation produced by such lofty piles, might count for something in the question.

Paving, and draining, and sewerage are, also, recognised parts of city police, to which all holders of property are made to contribute, for the public good, by their taxes paid into the city treasury. Public convenience, and the public health are administered to by these means, the application of which is ensured by suitable legislation, under regularly appointed agents, Councils, and Boards of Health. Few will be found, in the large cities of Europe and America, to contest the propriety and wisdom of all these measures of public hygiene, although, in many smaller places, they may be thought by the inhabitants to be unnecessary, or to call for an expenditure of money beyond the good to be attained. There are not wanting people in every country, Christian or Mohammedan, who claim, as one of their reserved rights, the privilege of having their senses of sight and smell assailed by all kinds of offals and garbage, and the stagnant filth of gutters, as if to mark the difference between town and country, and at the same time, their freedom from restrictive laws. There are, also, many who claim that as their house is their castle, they have the right to exclude the air from it as carefully as if they were in a state of seige, and had been obliged to close every aperture through which an enemy's missile might find an entrance.

The problem for sanitary legislation to solve, is protection of the public health, compatibly with the rights of property, and the pursuits of industry. The common right of all, is entire enjoyment of the material conditions for healthy life. This right is seldom obtained in its full latitude. It is too often neglected by those who might possess it, and still oftener is it withheld or violated by force and selfishness, in such a way that the masses find it difficult to have justice done to them. The contest between cupidity and sanitary rights is sometimes unavoidable, but more frequently it results from ignorance of the real condition of things. The true interests, even in a pecuniary sense, of the employer are, not to obtain the greatest possible amount of work from day to day, from his labourers and workmen, without reference to their having a due proportion of time for sleep, and moderate recreation in a pure air. Nor will it be the best economy, to stint those persons in the quantity of wholesome food, which is intend-

ed to renovate the weakened body, as well as merely to remove the cravings of hunger.

The landlord who looks to having his houses always occupied by good paying tenants, will not be negligent either of the health or the morals of those persons. He will not speculate on the powers of endurance of human beings, when deprived of fresh air, by residence in damp, close, and badly ventilated rooms, and who are compelled to inhale an impure and vitiated air, the product of their own respiration, and the exhalations of the accumulated filth of cess-pools and yards choked up by garbage. The inmates of such habitations are necessarily less fitted for labour, and active employment of every kind; lose more time by sickness, and are carried off in larger proportion by death, than those more favourably circumstanced. Their nervous system is weakened, and disturbed in the functions of the senses and of the brain; and even if intemperance should not add its baleful influence to their distress, they are more open, in consequence, to the causes of moral disorders and temptations to evil doing.

Men thus wearied and worn, depressed in mind and body, and deprived of all the genial excitement of fresh air and light, and all the objects which might remind them of nature under her more pleasing aspects, soon become careless of themselves, indifferent to the wants of their families, and regardless of the obligations contracted with employer, or landlord, or the administrators of the laws, with whom they may be brought into contact. They are unfitted for prolonged and regular labour. They are bad workmen, bad tenants, and unsafe neighbours.

Individual health is, therefore, if we believe these views to be correct, an affair of individual and domestic economy, as public health is of public or political economy; and it behooves all citizens, in these two-fold relations to themselves personally, and to the state, to adopt and carry out suitable sanitary regulations. The public obligations are very generally admitted, as we find by the appointments, in most large cities and towns, of Boards or Councils of Health, whose functions, if they do not include the power to act summarily in the premises, for the prevention and removal of all nuisances, are at least comprehensive enough for warnings, and for authoritative appeals to other constituted bodies.

Within the period during which the Committee of the College, represented by the present reporter, ought to have narrated the fact, a great sanitary reform has been begun and is in progress in Great Britain. The lamentable state of things in nearly all parts of the kingdom, calling for it, and suggesting the means of carrying it out, have been made public in various parliamentary reports. Some of the more voluminous of these have been carefully read by your reporter, and notes of them taken by him for the purpose of being placed before the College. He finds, how-

ever, that to reproduce them on the present occasion would require more detailed statements and greater occupation of time than might be acceptable to his associates. He must, therefore, content himself with a reference to the more prominent points of the subject, both in regard to the reports in question, and other documentary matter and works in England and on the continent of Europe, as well as those of home origin. A general survey, however imperfect, will not, it is hoped, be without its value, both as a contribution to knowledge, and as suggestive of sanitary reforms, and extended and systematic efforts for this purpose, in the United States.

In the year 1844, Commissioners appointed by Queen Victoria, for "*Inquiry into the State of Large Towns and Populous Districts*," made their first report. The range of their inquiry was with reference to "the Causes of Disease among the Inhabitants, and into the best means of Promoting and Securing the Public Health under the operation of the Laws and Regulations now in force, and the usages at present prevailing with regard to the Drainage of Lands, the Erection, Drainage, and Ventilation of Buildings, and the Supply of Water in such Towns and Districts, whether for the purposes of Health, or for the better protection of Property from fire; and how far the Public Health and the Condition of the Poorer Classes of the People of the Realm, and the Salubrity and Safety of their Dwellings, may be promoted by the amendment of such Laws, Regulations, and Usages."

The Minutes of Evidence appended to the first report of the Commissioners contain a large body of matter relating to the causes which deteriorate the public health and give rise to sickness and death; and, at the same time, they furnish valuable suggestions and plans for ameliorating present evils, and preventing their recurrence. An analysis of the Evidence and an Index of the Principal Matters contained in it give facilities for reference which it is very desirable should be imitated in all voluminous reports of public bodies, but which, unfortunately, are wanting for the appendix and the second report of the Commissioners.

The investigations of the Commissioners were directed, in a more especial manner, to the subjects of drainage and sewerage, and of the supply of water to the metropolitan districts, (London, Westminster, and Southwark, &c.,) and in "fifty towns where the rate of mortality appeared, by the return of the register of deaths, with a few exceptions, to be the highest. These include the largest manufacturing towns, and the principal ports after London, and contain a population of more than three millions of persons." London may be computed to contain two millions of inhabitants.

We learn from the report that there is scarcely one, out of the fifty cities and towns, in which "the drainage or sewerage can be pronounced to be complete and good, while in seven it is indifferent, and in forty-two decidedly bad, as regards the districts inhabited by the poorer classes." The investigations, within the several towns, of the arrangements for house as connected with street cleansing, present nearly the same results.

As relates to the supply of water in the above towns, "it appears that only in six instances could the arrangements and the supplies be deemed, in any comprehensive sense, good; while in thirteen they appear to be indifferent, and in thirty-two so deficient as to be pronounced bad, and, so far as yet examined, infe rior in purity."

It is gratifying to find reference made, in the report, to the cities of Philadelphia and New York, "as showing the successful operation of a system of a constant and ample supply of water adapted to those cities." Boston may now be added to the list.

The report states a fact which is sometimes overlooked, viz., that drains will be productive of little or no benefit, even if they do not aggravate existing evils, when no provision is made for the introduction of supplies of water sufficient to cleanse them.

The necessity of a good and uniform system is shown in the remark, that where sewers and drains are defective in this respect, they allow decomposing refuse to accumulate, and permit the escape of emanations into the streets or houses; and thus the inhabitants fail to derive benefit in proportion to the expense incurred. Mischief has ensued from the neglect of making the connection of the internal works for a complete house-draining, with the works of external main drainage, a necessary and component part of an efficient measure.

The medical witnesses brought facts in support of their strongly-urged and unanimous opinion, "that no population is healthy which live amid cess-pools, or upon a soil permeated by decomposing animal or vegetable refuse, giving off impurities to the air in their houses and in the streets." They state the necessity of preventing all accumulations of stagnant water and refuse in or near houses, and of substituting a system of house-drainage and cleansing, aided by the introduction of better supplies of water into the houses.

The contrasted effects, on the health of the inhabitants, of sewered and unsewered towns, and of districts in the same town, are pointed out in the report. The duration of life is six years more in the sewered than in the unsewered streets of Ashton-under-Lyne. Equally marked results obtained from similar causes in Chorlton,

a township of Manchester. Mr. Holland, in his statements to the Commissioners, shows, "that, while the mortality in the undrained streets of Chorlton amounts to four per cent., in the drained districts it is only two per cent.; and although other causes than drainage may co-operate in the production of the great difference, that it is the principal cause is shown by the positive and precise fact, that some streets, containing 3,500 persons, and possessing a mortality of 1 in 32 of the population, immediately after sewerage, were elevated in the scale of health, so that deaths decreased to 1 in 50, or, in other words, the deaths were diminished more than 20 a year out of every 110, even as a first effect of putting the streets in a proper condition as to sewerage." Other districts of Manchester give the same forcible lesson.

Fever is a not unfrequent effect of a neglect or defect of sewerage. Its course in a town may be tracked by that of neglected sewerage. Dr. T. Southgood Smith, whose evidence was so full on the chief sanitary questions, asserts that, without attention to sewerage, all other precautions must be vain. Next in importance to this, in his mind, is ventilation. Some would give the latter the priority on the score of importance, since, if it were thorough, the evils from the other source would be greatly abated by the diffusion and dilution in the atmosphere of the deleterious emanations which Dr. Smith regards as the cause of fever—typhus, he means.

Rotherhithe, a part of London, situate on the Thames, has been the favourite haunt of cholera. Its sewerage was deplorably defective, being by open sewers communicating with the Thames. Malignant cholera spread to a much greater extent on the line of open sewers than in the other poor densely inhabited places. In yet other districts, we are told, that the line of habitations badly cleansed and suffering from defective drainage formed the line of cholera cases in 1831–2. Fever acknowledges a like origin.

Dr. Laycock, in his highly interesting report to the Commissioners, on the Epidemics of York, tells us, that the first steps of the plague, which used to ravage this ancient city in the middle ages, and down to the early part of the seventeenth century, seem to have been very similar to those of the cholera in 1831, marking the badly drained districts by its course, as did the latter. "It is a singular coincidence, that, while the cholera commenced in the Hay-market, near the traditional spot of the plague under consideration, [in 1604,] and probably near to that of 1551, the first death from cholera took place also in the parish of St. Michael Spurriengall, and on June 5th." It was in this parish, and on June 4th, 1604, that the first death from plague occurred.

An idea may be had of the little interest felt in a system of progressive sewerage from the fact, that in some large towns of

England, as Wigan, Rochdale, and Bolton, there is not the slightest knowledge of the plans of the sewers already made.

The entire inattention to drainage in some towns of the kingdom is manifest in Merthyr Tydvil, which contains 37,000 inhabitants, and is totally deficient in all means of this kind.

Pipes for Drains.—For drains, earthen-ware pipes, glazed, are preferable to brick conduits, which sometimes allow of exudation of their contents. The size of a pipe for a drain will depend on the number of houses. In one instance, an 18 inch drain was carried 400 feet at the back of 40 houses, where there was a good supply of water, and it was kept clean. The diameter of a pipe for a house-drain, of an ordinary tenement, need not be more than from three to six inches.

Flushing.—Flushing was recommended to the Commissioners as a good means of cleansing sewers. It consists in collecting a sufficient body of water in a tank or other reservoir, which is to be so placed that its contents, when suddenly evacuated, may sweep the whole length of the private sewer, filling completely its interior, and thereby effectually carrying every impurity before it on to the street or common sewer.

But where an adequate supply of water can be obtained at all times, and with an impetus derived from the height of the reservoirs and the reduced calibre of the conducting pipe, as in Philadelphia, New York, and Boston, there is no necessity for this system of flushing. By turning the water, with which each house is or may be supplied, into drains, private as well as public, these may be thoroughly washed and cleared of their contents.

Infiltrations into Sewers.—As if the matters received into the sewers in common were not offensive enough, there are instances of the exudations from burial grounds finding entrance through the brick sides of the sewers. The distance in one case, in the parish of St. Pancras, of the sewer from the churchyard, was thirty feet.

Unless there be an abundant supply of water for keeping the house and branch drains free of obstruction and accumulation, they will prove a source of annoyance and disease. To give effect to these means, a general and systematic survey of the different levels of a town should be made, and an uniform plan of sewerage adopted. As a general rule, each house-drain, at least, ought to be provided with a trap or valve, to prevent the escape of emanations from the drain into the house. Especially is this necessary where the supply of water is not abundant enough to keep the drain clear.

The ventilation of sewers by means of lofty shafts and chimneys is recommended by different gentlemen to the Commissioners. A simple and economical plan would be, to connect

the sewers with the chimneys in houses by means of flues. By a simple contrivance of this kind, a water-closet, from the well of which a flue opens into the kitchen chimney, may be kept quite free from the least unpleasant odour or impurity of air.

Separation of Sewers and Drains.—In order to render the system of drainage and sewerage more complete, Mr. Simpson, Advocate, of Edinburgh, proposes, in the *Journal of Public Health*, (Vol. I., pp. 34-6,) to separate refuse sewers from surface water-drains. The first kind of drainage is of *sewage proper*, the liquid refuse of dwellings; and the second, or surface draining, is of rain and melted snow. "Sewage flows continually, and in measurable quantity; surface water irregularly, sometimes not at all, often copiously, and occasionally excessively." Mr. Simpson proposes that "the sewers for the sewage should be conduits which, from their commencement in private dwellings to their final debouchure from the main of the largest size, should not, by one single open vent during their whole course, communicate with the open air. If to these sewers a *regular* fall is given, it need not be a great one, and they are made of proper materials, and securely jointed as they are prolonged, with an ample supply of water for their ordinary flow and occasional flushing, they will never need any other cleansing, or, for indefinite periods of time, any repair or renewal." Mr. Simpson believes that a calibre of not one-third, perhaps not one-fourth part of the present large conduits, which are calculated much more for rare floods of rain-water than for sewage, will suffice, and not occasion one-fourth part of the cost. He urges on the public the abandonment for ever of *built* sewers, be they square, round, or egg-shaped, and ever so closely fitted and jointed, and to substitute close pipes or tubes in their room. These, as first recommended by Mr. William Dyce Guthrie, should be of burnt clay or earthen-ware, and glazed on the inside, or on both sides, with a coating which will defy the chemical agency of sewage water, with its salts and ammonia, and by its smoothness facilitate the passage of the sewage. These earthen-ware sewers may be made of any size and strength, with spigot and faucet joints, (to be united by Roman cement or patent *intonico*.) Mr. Simpson used a pipe of this material in his own house, in place of the old box sewer, which annoyed his family and endangered their health by being statedly choked up, so as to require its being opened and cleaned out by manual labour. The pipe was four inches in diameter, and extended sixty feet, with a fall in this distance of one foot. It empties into the main street-drain. To use Mr. Simpson's language respecting this improvement, "No drain odour returns from it in kitchen, sink, or water-closets, for nothing remains in it; and when it is occasionally flushed, the water in a few seconds runs clear in it, which can be seen by an opening only uncovered for that observation."

The return of reflux odour, one of the greatest objections to house-drains, is prevented by three modes pointed out by Mr. Simpson:—"First, the water-pan *in*, and the sigmatic curve *under*, the water-closet and sink; next, another sigmatic curve, if the descent will make it safe, where the pipe joins the main street-drain; and thirdly, a delicately hung flap valve of galvanized iron at the extreme end of the tube, where it discharges into the main drain. The valve will always be shut, except when opened by a flow from the house."

Rats, the great enemy to built drains, by their picking out the already softened lime, and burrowing in the ruins which they have made, will not find entrance, or passage, at least, through a slippery pipe.

For surface draining, which would be chiefly to discharge the rain in sudden thunder showers, Mr. Simpson recommends the use of the drains already existing. The street dirt and refuse would still require sweeping by hand or machine; and it should not be allowed to be carried into the drain. "Dust carts will not be superseded, for they are wanted for the solid debris of houses, vegetable and animal refuse, and ashes, which ought, on no account, ever to be thrown down the pipe drains. With well swept streets, the rain-water would not be so foul as to render foul-air-traps at the gratings necessary. The old drains would soon be purified."

But, in streets that will permit it by any degree of declivity, Mr. Simpson does not see the necessity of expensive underground drains at all for mere rain-water. "It may be made to flow perfectly harmless in deep, well-paved gutter-ways; and when a thunder shower comes, the whole pavement will not be the worse for the extraordinary cleansing."

For his sewers, Mr. S. rightly asserts that water in unstinted proportion is indispensable; but especially for a system of tubular sewers, which cannot be cleaned by any other method.

The suggestions of the Scotch writer just quoted are not directly applicable to the system, or, we should rather say, the want of system, in our towns, of disposing of the contents of water-closets and privies. The first are as yet few in number, and more frequently constructed over privies. Many of these latter diffuse often their effluvia around, to the annoyance of the sense of smell, if not to the positive detriment of health. The fluid and gaseous exudations from their sides must become every day, with the increased density of population in our large cities, a more serious nuisance, by finding entrance into cellars and underground apartments, affecting the purity of the water of cisterns in these places, besides endangering the stability of the houses themselves. They become so many sieves, for the more fluid part soaks through into the sub-soil; and, as has happened in

foreign cities, the ground must be completely saturated with liquid filth, the solid matter being all deposited within. Some time will probably elapse before the stringent recommendation of Mr. S. is adopted in our towns. It is, that each house should be compelled, within a specified term, to establish a water-closet, to make perfect its own private sewer.

Much of the expense attending the construction of the public sewers might, Mr. S. thinks, be met by the sale of the sewage for agricultural purposes, which, according to his plan, would be more valuable, and could be more readily collected, than it now is.

As already remarked, however, houses without drains at all are in a more fortunate position than those which are badly drained. We wish that the following significant remarks on this subject were only applicable to architects and builders on the other side of the Atlantic. It occurs in a note, by the editor of the Journal of Public Health, to *The Report of the Surveyors on House-Draining to the Metropolitan Commission of Sewers*:— "Whatever constructive skill a builder may have exhibited in a house, appears to forsake him when he comes to consider those arrangements most needful for health. The life or death of the inmate is placed in his hands; but as far as the drainage is concerned, [using the words of the Surveyors,] 'all that has been aimed at, for the most part, has been to provide a hole of some sort, through which the refuse may get away somehow.'" In another important matter, that of ventilation, we may observe, in advance of a more formal notice hereafter, that the builder forgets to leave a hole of some sort in the finest rooms in the house, both for reception and sleeping, by which pure air may find an entrance, and foul air an exit.

So imperfect is, or was recently, the public drainage in even the best parts of London, as in Regent Street and Portland Place, that according to the testimony of Mr. Guthrie, before the Health of Town Commissioners, there was not, at the time he made his observations in those streets, one gulley-drain in twenty that was not greatly choked up, and this even during heavy falls of rain.

The subject of drainage is not one which interests the inhabitants of towns alone. It concerns deeply those of the country, both on the score of profit and of health. Good land-drainage improves the soil, and brings it into a state fit for cultivation, at the same time that it converts a sickly into a healthy district. Innumerable are the proofs of this assertion. Reports made from competent observers in England and Scotland, attest the prevalence of disease, especially periodical and typhus fevers, in badly-drained regions, and a high standard of health in those in which the drainage is good and the soil dry. The Isle of Ely, in Cambridgeshire, England, was at one period in a desolate state, being

frequently inundated by the upland waters, and destitute of adequate means of drainage. The lower parts were a wilderness of stagnant pools, the exhalations from which loaded the air with pestiferous vapours and fogs. But within the last fifty years, changes have been brought about, by means of drainage, embankments, and engines, which might appear to be the effect of magic. A forlorn waste has been converted into pleasant and fertile pastures, and they have been succeeded by bounteous harvests; and the health of a now increased number of inhabitants has been greatly improved.

Paving.—*Paving* is a necessary preliminary and adjunct to drainage. Numerous are the records which show the diseases originating from unpaved streets, which, in consequence, are often kept in a muddy condition, worked into holes, and the receptacles of vegetable and animal refuse. London, before the streets were paved, was as great a sufferer from periodical fevers of all grades as any of the most rural districts in our own country. The importance of good pavement, and the evils from neglect of it, are pointed out in most of the reports on the health of towns.

Cleansing the Streets.—Cleansing the streets, by a proper system of scavenging, is called for both by the requirements of health and comfort. The streets have been said with justice to be the reservoirs whence we are supplied with fresh air; and if it be impure in them, it is impure everywhere. It is not enough to prevent the access of foul air from untrapped and unwashed drains, but also from surface filth and remains of any kind accumulated in the streets. Further, continues the same writer, Mr. P. H. Holland, of Manchester, dirty streets cause dirty houses, dirty clothes, dirty persons; every one walking in them in wet weather carries into his house some portion of dirt to increase the difficulty of domestic cleanliness; in dry weather the same effect is perhaps more powerfully produced by constant clouds of dust.

Economy of Street Cleansing.—The great obstacle to increased cleanliness of the streets is the expense of frequent scavenging. Mechanical ingenuity has, within a few years past, obviated in a considerable degree that objection. Mr. Whitworth, the celebrated mechanic of Manchester, has perfected a sweeping machine, by means of which he is enabled to sweep the streets of that town three times as often as they used to be swept by hand, at the same cost. In Birmingham, Leeds, and London, as well as in several other places, it has likewise been worked with success. In Liverpool, from some unexplained cause, it has not worked equally satisfactorily.

The expense of cleansing the streets and ash-bins, &c., is balanced by the sale of ashes and dust by the parishes of London.

It appears from the reports of the visiting Commissioners in towns, that, while the public streets receive some share of attention from the scavenger, many small streets are utterly neglected, as well as the courts and alleys which are treated as private property; and therefore out of the jurisdiction of the Commissioners. Similar differences are to be seen in our own city. "As an illustration of the magnitude of this evil, we may state," say the Health of Towns' Commissioners, "that in Liverpool there were, in the year 1841, 2,398 courts, containing 68,365 persons, besides streets not under the public charge, of which we have no return before us." And again: "The report, in reference to Birmingham, discloses a similar extent of evil. The courts in the parish of Birmingham alone are above 2,000 in number, and their inhabitants exceed 50,000, besides many in the adjoining parish of Ashton. The description common to many of these places shows that they stand greatly in need of regulations for their cleansing. The atmosphere, which is necessarily close and confined, is often further deteriorated by the presence of open privies, close to which there is often one or more pig-sties, tubsfull of hogwash, and heaps of offensive manure. These courts are frequently unpaved, and the open channel for dirty water ill-defined, so that stagnant puddles are the consequence.

The experience of Edinburgh shows that, under proper officers, the daily cleansing of the city, and of its innermost courts and closes, is attainable at the moderate expense of ten thousand dollars a year. In Aberdeen the work is done daily at a profit to the city of a sum equal to three thousand dollars. In Hull the inhabitants have found out that they can readily dispose of to the small farmers, who profitably collect, the refuse from the houses, even in the courts and alleys which are inaccessible to carts.

Privies.—The cleansing of privies is a most important, but greatly neglected, part of medical police in many of the towns of Great Britain. "The filthy condition of many of the courts, from the absence of the public scavenger, and the neglect of the drainage and paving, is rendered still more disgusting by the abominable state of the necessaries." "In addition to the fœtid exhalations from the overflowing privies, there are found in many towns open middens or cess-pools, which receive the ashes, night-soil, and all other refuse, both animal and vegetable, from the adjoining houses."

The little privacy of these necessaries is evinced in the facts which reached the Commissioners, and are recorded in their report: "That they should be in the condition generally described is not surprising, when we state that, in one district in Manchester, there were found to be only 33 necessaries for 7,095 persons, or 1 to 215 inhabitants. Throughout the whole town of Sunder-

land the proportion is only 1 to 76 persons. We have, also, met with one instance of only 1 necessary to 30 families; and it appears that throughout the courts in Liverpool the proportion is generally about 2 to 80 persons. The town of Merthyr Tydvil presents even worse instances. These are quoted as instances of the general deficiency, and not as isolated cases."

Although no such extremes of neglect of decency and cleanliness are met with in Philadelphia, nor, it is believed, in any of our cities, yet the reprehensible practice of several houses in some of the courts having a privy in common sometimes occurs.

Supply of Water.—An abundant supply of water in every city, town, or village is required, both for personal and domestic, as well as for public purposes. It is necessary as a drink, and for culinary purposes, also for personal ablution and washing clothes. Without a full supply of water it will be impossible to carry out an efficient system of drainage, and of cleansing the streets and houses. In an economical point of view alone, it is all-important for the extinction of fires.

Reference has been already made to the imperfect supply of water to the chief towns in England. From the returns made to the Commissioners, that only twenty-six out of the fifty towns to which their investigations extended, were supplied with water under the provisions of any act of Parliament. Even in these the supply is very deficient, and in many of them is only extended to a part of the town, the poorest and most populous portions receiving from it little or no benefit. At Birmingham, only 8,000 out of 40,000 houses are stated to be separately supplied; and at Newcastle-upon-Tyne, it is stated the company supply about one-twelfth of the dwelling-houses, and that very few of those have either tanks or tubs. In Bristol, containing, with Clifton, a population of 130,000 inhabitants, not more than 5,000 persons, constituting the most wealthy families, are supplied with water by pipes laid into their houses; the remainder are dependent on public and private wells.

In contrast with these deficiences, and the extravagant price the poor pay for water in many places, is its abundance in other towns, as Nottingham and Preston, for example. In the former, the supply amounts to 40 gallons *per diem* to each family; and in the latter to 45 gallons. A fashion of intermittent supply of water at certain points in a city is reprehensible, both on the score of time and morals, not to speak of the confusion and quarreling in the crowd of persons collected around the water stand.

The Commissioners estimate that the quantity of water for domestic supply should be twelve gallons *per diem* for each individual of the population. The quantity required for public purposes will vary according to the situations and other peculiarities of the towns. The quantity of water necessary for flushing the

sewers will depend on the materials of which they are constructed. A more abundant supply may lead (the Commissioners remark in conclusion) to the adoption of a system of washing the dirt from the pavements, and other roads which are constructed of such materials as will admit of this mode of cleansing.

It is pleasant, for us in Philadelphia, to reflect that for all the purposes just indicated, both of a personal and general nature, the city is well supplied with water. It cannot be said here, as it is by the Commissioners, when speaking of the defective supply of water to the poor inhabitants of so many of the English towns, "The present difficulty and the labour, after a hard day's work, of obtaining water, has a very great effect on their economy, their habits, and their health. The obstacles to the maintenance of domestic or personal cleanliness soon produce habits of personal carelessness, which rapidly lower both the moral and physical condition of a whole population."

The following is an estimate of the average consumption of water per head in some of the chief cities, including not only what is drank, but what is consumed *per diem* in domestic and manufacturing purposes, also for baths, stables, gardens, washing the streets, fires, &c. By an inhabitant of Paris, 2½ gallons; of London, 20; of Philadelphia, 30; of Edinburgh, 19; of Glasgow, 37; of Vienna, Grenoble, and Montpelier in France, 15; all France, 5 gallons.

Various means, on a large scale, have been adopted to arrest the impurities of water destined for the supply of large cities. These consist chiefly in filtration through gravel, sand, and charcoal. Boiling the water, by destroying the animal and vegetable matter which river and rain-water so generally contains, destroys the taste and odour dependent on this source; but recourse to such a process cannot form a part of public, however useful it may be in private, hygiene. Boiling also precipitates some of the earths which were united with carbonic acid; but the neutral saline constituents of the water still remain, and hence it retains the peculiar flavour dependent on this cause.

Professor Clark, of Aberdeen, has taken out a patent for the purification of waters. The patent consists in the addition, to the water, of lime held previously in solution. It has no effect on the gypsum of common water, and therefore can have little or no influence in rendering hard water soft. Its operation is by producing a deposit of carbonate of lime. The weight of chalk or carbonate of lime thus separated from the whole waters of the several companies of London, estimated at forty millions of imperial gallons, would be about twenty-four tons a day, or nine thousand tons a year.

The saving in the less wear and tear of clothes, and in the articles of soap and soda, by the use of soft water in the place of

hard, is very great. In London, for instance, the cost of soap used per annum is estimated at upwards of five millions of dollars.

The Best Drinking Water.—That which we might call pure water, the product of boiling, and still more of distillation, for example, is not the most salutary for habitual use. It is vapid, and does not sit as lightly on the stomach as common spring or filtered river water. Not only is an impregnation with atmospheric air, but also with saline substances, as the carbonated earths, necessary to constitute wholesome potable water. (Bell on Baths and the Watery Regimen, &c., p. 254.) M. Dupusquier, following up the inquiry instituted by M. Bousingault, specifies the impregnation of water with the following substances as a providential provision: viz., atmospheric air, carbonic acid, chloride of sodium, (common salt,) and especially bi-carbonate of lime, (common chalk being the carbonate of lime.)

From analyses made by Professors Boye and B. Silliman, it appears that every gallon of Schuylkill water, which supplies Philadelphia, contains about two grains of carbonate of lime, and five grains, in all, of foreign matters; that of Croton for New York, four grains of carbonate of lime; and of the Thames and Seine, each sixteen grains of the same carbonate.

Water in Leaden Cisterns and Pipes.—A common cause of deterioration of the purity of water arises from the mode of transmitting it from the reservoirs and main pipes to dwelling-houses in leaden pipes, for the purposes of domestic economy. It sounds paradoxical to be told, and yet the assertion is quite true, that the purer the water, in its freedom from saline impregnation, the greater is the danger of its acting on the lead,and converting a portion of it into a salt, which it holds in solution. When we speak of pure water, we suppose it to contain atmospheric air and carbonic acid, by which its solvent power is greatly increased. Hence rain-water readily acquires an impregnation of lead from roofs, gullies, cisterns, or pipes made of this metal. The saline substances, on the other hand, found in spring and river-water, impair the corrosive action of water and air, and thus exert a protecting power. Of these, the carbonates and sulphates are the most powerful, the chlorides or muriates the least so.

This important subject has been examined by your reporter in another place. (*On Baths and the Watery Regimen*, Chap. xxii.) Drs. Christison and Taylor are agreed in attributing the chief protecting power in the water itself to consist in the sulphates which it holds in solution. Mr. Taylor says that when the sulphate of lime forms only the five thousandth part of water, no carbonate of lead is formed; and this salt dissolved in the above or in larger proportion in distilled water will still confer on it the properties possessed by river-water.

Dr. Dana, of Lowell, Massachusetts, who has examined the subject with a great deal of care, is disposed to doubt the protecting power of the salts of lime against the erosion of lead by water to the extent assumed by other writers. He adduces some experiments of Professor Hasford, of Cambridge, Massachusetts, which go to show, that of the waters of five wells of that place analyzed, the only one which dissolved lead, after standing for several hours in lead pipes, was that containing sulphate of lime, or "gypsum in solution in large quantity." The saline ingredients of the other four were mostly carbonate of lime. Excess of carbonic acid neutralizes the protecting power of the salts of lime, as does also galvanic action.

Iron and lead in contact give rise to a galvanic action, which is accompanied by a change in the lead, owing to its being affected by alkalies and alkaline earths, which are among the electro-positive elements. A very slight difference in the metal will suffice to develop galvanic action. To produce this effect it seems enough that the junction of the pipes should be soldered with the usual mixture of lead and the more fusible metals. Even inequalities in the composition of the lead may have the same effect.

Dr. Dana recommends, as substitutes for leaden pipes in conveying water, "1. Wood, wherever it can be used; 2. Cast iron or wrought iron tubes; 3. Copper, protected by pure tin. The use of all other metals, or alloys of these, in the present state of our knowledge and experience in these objects, ought forthwith to be abandoned."

Dr. Christison speaks of an "effectual remedy" which has been lately introduced by a patent invention for covering lead pipes, both externally and internally, with a thin coating of tin.

Little inconvenience can result from the use of leaden pipes where the water flows through them by hydraulic pressure, as they can be speedily emptied before using the water which comes from the larger iron pipes beyond them. It is only in cases of slow entrance, and retention for some time of water in leaden pipes and cisterns, that the question just discussed becomes a practical one, affecting the public health.

Ventilation.—The atmosphere by which we are surrounded, and from which, by means of respiration, our bodies derive the oxygen necessary for the support of life, is, at the same time, the great reservoir into which flow all the exhalations from the bodies of men and animals, and from animal and vegetable decay, and the surface of the soil; which, if not largely diluted by admixture with the air, or carried off into space by the winds, would prove a destructive poison to all the people congregated in cities and towns. This removal of exhalations is done by ventilation; and the more complete the process, the healthier are the inhabitants,

as, on the other hand, its imperfection and neglect are productive of diseases of the worst kind.

Streets are so many channels for conveying the requisite air to the inhabitants of the houses on either side of them, and the wider and the more numerous are these channels, the more completely is their object in this respect attained. Proportions ought to be preserved between the breadth of a street and the height of the houses in it. If the latter be very high, and the former narrow, both the air and sun are prevented from reaching the street and the lower portion of the houses. Still greater detriment, in this respect, is experienced by the occupants of narrow alleys and small courts, in which, unfortunately, the crowd of inhabitants is greatest, and the supply of fresh air and suitable ventilation the least.

Courts and Cellars.—In Liverpool, in 1841, there were 2,398 courts, containing 68,365 persons. In the parish of Birmingham alone there were 2,000 courts, containing 50,000 inhabitants. But there is yet a lower deep in this descent from the level of health. In the courts of Liverpool, gloomy and badly-ventilated as the houses themselves are, we meet with cellars under more than one-half of them, or 1,272 in number, occupied by 6,290 persons. Of the cellars in streets, 2,848 were damp, and 140 wet. Of the 2,398 courts in Liverpool, there were only 693 that had an opening back as well as front. The whole number of cellars in Liverpool was 7,892, containing a population of nearly 40,000 persons, or five persons, on an average, in each cellar. Aware, as we are, of the impossibility of ventilation of these courts and cellars, and the continual deterioration of the air by exhalations from them and their inmates, we need not wonder at the bad eminence which that city most unexpectedly acquired of late years on the score of disease, and the short average duration of life of its inhabitants.

Repeating the language of the Commissioners, from the appendix to whose report we derive the preceding statistical statements, we can say, with fearful truth, "It is now well ascertained, that living in such impure atmospheres as generally surround the poor, in their habitations as well as in factories and workshops, induces consumption, renders the constitution more prone to, and less able to resist the attacks of diseases of various kinds, especially fever, and by depressing the physical energies, causes a resort to stimulants, resulting in habits of intemperance." It is well said in conclusion, that "the application of a sufficient remedy for the serious evils arising from this cause in the interior of houses, would, we are convinced, contribute largely to promote the health of the former classes."

Density of population is an unavoidable cause of diminished physical, and it may safely be added, also, of mental energy, and

of disease. This cause presses with most force on the poor, who are crowded into smaller spaces than the affluent, and those in comfortable circumstances; and this, of itself, even if the two classes enjoyed equality on the score of clothing and fuel, would be productive of less longevity, and of greater mortality among the poor. It has been shown by Mr. Hallam, in Chorlton, and by Dr. Duncan, in Liverpool, that the closed streets, that is, those only open at one end, in the former town, and the courts and cellars, in the latter, exhibit the largest proportion of deaths, particularly of those resulting from epidemics.

The evils resulting from defective ventilation are greatly increased by bad or deficient drainage. Thus, while the mortality in both sets of courts, (those sufficiently drained, and those badly drained) was as high as 5.4-10 per cent.; more than 22 persons in every 100 in the undrained courts, had serious cases of illness, and only 10 in every 100 in the drained districts.—(*Report on the Sanatory Condition of the Large Towns of Lancashire*, by Dr. Lyon Playfair.) This gentleman was one of the Commission on the Health of Towns.

On the same principle we explain the superior health of those who work out of doors. Dr. Guy, in his evidence before the Commissioners, broadly affirms, and he sustains his position by figures, that both men and women who follow their employments out of doors, are less subject to consumption, and when they die of it, they die at a later age, than those who work within doors, and are protected from the weather. It is not the labourer, only, who is thus comparatively exempt, but also, the hawker who stands about in the streets and markets, and who probably uses little more exertion than those who work within doors.

Dr. D. B. Reed, one of the Commissioners who inspected the Northern Coal Mine District, appropriately remarks on this subject, "The evils from defective ventilation are, then of great magnitude, and the continuity of their operation gives them a power and influence over the system, which cannot be too minutely investigated. Few pause to consider the necessary consequence of 20 respirations per minute, 1200 per hour, or 28,890 in a single day and night, where not only a noxious atmosphere is inhaled, and brought directly in contact with the blood, but where, also, the state of the air diminishes the amount of discharge of those noxious products which the system discharges more and more largely in proportion to the purity of the atmosphere inspired.

"Bad ventilation, also, is as injurious to the mind as to the body, and in its more aggravated forms not only induces headache and apoplexy, but, conjoined with other circumstances, is prone to favour that depression which leads, at times, to low spirits, or even to suicide."

Allusion has been made to the crowded courts and cellars of

Liverpool and Birmingham, and the sufferings of their inhabitants from, among other causes, defective ventilation. The density of the population of Liverpool is, as nearly as possible, 100,000 per square mile. The town of Nottingham exhibits even still more revolting features, in this report. "In one part of the town, of which account was recently taken, more than 4,000 inhabitants were ascertained to dwell within a square of about 220 yards; and it is believed that, in other parts, this proportion is even exceeded, as instanced in one quarter of only 8,280 yards in area, but which contains 195 houses and 787 inhabitants, thus affording 460 persons to an acre, or 10½ yards to each individual." Other quarters are still worse; one giving only 9½ yards, and another 8½ yards for each individual.

Dr. Reed describes the great masses of houses built in Nottingham back to back. "When I mention," he continues, "that there are nearly 8,000 such houses built back to back, and side to side, with no other outlet than the street door, there will appear little occasion for farther amplification on this head. Suffice it to say, that in such quarters it is hardly possible that a family can preserve for any term of years, either decency, morals, or health."

Worse, if possible, than what is met with in districts of some English towns, is the condition of the poor in the chief cities of Scotland. Dr. Arnot penetrated into some of the wynds of Edinburg and Glasgow, and the following, among other scenes, met his eye. After describing the passage through a house into a court, with a dung receptacle of the most disgusting kind, and then through a second passage into a second court, with a similar abomination, and then through another passage to a third court, and a third dung heap, proceeds to say:—

"There were no privies or drains there, and the dung-heaps received all the filth which the swarm of wretched inhabitants could give; and we learned that a considerable part of the rent of the houses was paid by the produce of the dung-heaps. Thus, worse off than animals, many of which withdraw to a distance, and conceal their ordure, the dwellers in these courts had converted their shame into a kind of money, by which their lodging was to be paid. The interior of these houses, and their inmates, corresponded with their exterior. We saw half-starved wretches crowding together to be warm, and in one bed, although in the middle of the day; several women were imprisoned under a blanket, because as many others, who had on their backs all the articles of dress that belonged to the party, were then out of doors in the streets."

Evils of the kind just described, do not exist to any thing approaching to the same magnitude, in Philadelphia; but both here, and in other cities on the Atlantic border, they are sufficiently common to excite notice, and to prompt to measures of reform as well

as of prevention. Some of the older streets and courts have become marts of trade, almost so exclusively as to have led to a great diminution in the number of their inhabitants. But on the other hand, there is an evident filling up of yards and gardens by stores and shops, which have no opening except in front, and of course no means of adequate ventilation. The privies are either built against the back wall, or are in cellars. All that seems to be thought of by either landlords or tenants, is how much room there will be for holding merchandize and wares of various kinds. The question of an adequate supply and renewal of fresh air for the respiration and health of the shop-keepers who spend their days in these places, is one not agitated at all, by any of the parties. A good stand for business is a foremost consideration, and it matters not to those who occupy it, whether it is worse than a prison.

The amount of cellar population in Philadelphia has not been ascertained. That of Boston, in a recent statement, has been set down at upwards of 2,000 persons. New York, in 1842, contained, as we learn from the report of Dr. John H. Griscom, (the City Inspector at that time) more than 1500 cellars, which allowing as he did, four individuals to a family, would represent more than 6,000 inhabitants. The entire number of dwellers in alleys, courts, and cellars, is 34,000, including a ward for which no returns of the cellars and their occupants were procured.

The pictures drawn by Dr. Griscom, of the diseases and unavoidable mortality caused by residence "in the damp, dark, and chilly cellars" of New York, and of "the degraded habits of life, the filth, the degenerate morals, the confined and crowded apartments, and insufficient food of those who live in more elevated soil," engendering a different train of diseases, say little for the forethought of the government and enlightened inhabitants of that city, which already rivals the cities of the old world in some of their worst features.

The effect of cellar habitation in increasing the mortality from "the bilous typhus fever" which prevailed in New York in the autumn of 1820, and which was known as the "*Banker Street Fever*," has been recorded by Dr. Pennel, in an essay on the subject published the following year. He states that out of 119 black persons who lived in cellars, 54 were sick of the prevailing fever, and of these latter 24 died; while of 443 who were better lodged, 101 had the fever, of whom 46 died. Thus, while nearly one-half of the inhabitants living in unwholesome cellars, were attacked with the fever, and nearly one-half of this number perished; not a fourth part of those better lodged were sufferers from the disease, although of the latter, the proportionate mortality was nearly the same as in the first division.

Dr. Griscom states, that in the Fifth Ward there were some cellars on the lots front and rear, containing from three to forty-

eight persons each; many of them being in the worst possible condition. In the Sixth Ward there were two cellars, containing eighteen persons in each, and two, thirteen in each, and several courts with from fifty to one hundred inhabitants each.

When we read these detailed statements of the low sanatory condition of a city, or of particular portions of it, we are not to infer that it is worse than other cities, until they have made an equally faithful exhibition of their defects and delinquencies in the same line.

The main object of the reporter, at present, is to turn to account, for home instruction, the materials collected by the authorities of other countries, showing the existing evils, and some of the necessary means of sanatory reform. He leaves to the industry of his successor, a careful collection of the vital and sanatory statistics of Philadelphia and the neighbouring cities. Enough has, however, already transpired, to excite to farther vigilance our Board of Health, and to show the necessity of legislation on the subject, by our municipal and state governments.

Mr. J. R. Martin, another of the English Commissioners, adverts to the medical bearings of this question, when he says: "amongst the many evils resulting from defective ventilation, there is one with which the public is little acquainted, viz.: its powerful tendency to counteract and oppose all the benefits derivable from medical management. But this is a truth without an exception; and while such is the effect on the sickly, we find the same deleterious influence among the healthy, in the use of stimulating and intoxicating drinks, in order to overcome the nervous depression caused by respiring impure air.

The Commissioners make sundry recommendations for the sanatory improvement of the different towns of Great Britain, which, if not all applicable to existing evils in this country, cannot fail to furnish useful suggestions for future action. Among other matters, they recommend that, the local administrative body be empowered to raise money for the purchase of property for the purpose of opening thoroughfares, and widening streets, courts, and alleys, so as to improve the ventilation of the densely crowded districts of towns, as well as to increase the general convenience of traffic.

With a view of insuring better external ventilation, the Commissioners further recommend, that courts and alleys be not built of a less width than twenty feet, to be open at both ends, and that they have an opening of not less than ten feet from the ground upwards, at each end; the width of the court being in proportion to the height of the houses. Streets not to be of less width than thirty feet.

Local acts have already been passed, in Liverpool, Leeds, and London, prohibiting the use of cellars as dwellings, unless they

are so constructed as to provide protection against the existence of such evils as we have just pointed out. The Commissioners further recommend, that after a limited period, the use of cellars as dwellings be prohibited, unless the rooms are of certain dimensions, are provided with a fire-place, and window of sufficient size, made to open, and have an open space in front; and that the foundations be properly drained.

Ventilation of Public Buildings.—A system of ventilation is imperatively required in all buildings in which a number of persons are collected together; whether it be for worship, the administration of justice, education, or amusement, or for manufactories and various trades. Nor must hospitals and asylums for the infirm and destitute be omitted in this enumeration. The lessons of the teacher fall on dull ears and understandings, the efforts of industry are, in a measure, paralyzed, amusements become annoyances and causes of painful reminiscence and regret, and the best intentions of philanthropy are too often rendered null, or of light effect, by the want of pure air, and by the diffusion of that which is noxious through the various edifices in which people are assembled.

Great is the want, everywhere, for a practical enforcement of the recommendations of the Commissioners for the Health of Towns, viz.: That measures be adopted for promoting a proper system of ventilation in all edifices for public assemblages and resort, and especially those for the education of youth.

Ventilation of School Houses.—One of the most interesting branches of inquiry into the ventilation of public buildings, is that relating to schools. Bearing on it is the observation made on different towns in England, as Manchester, Liverpool, &c., that a large number of the scholars were always kept away by sickness, owing to their unhealthy residences. Of the children who are reported as going to the infant schools in Moorfields parish, the enormous amount of 70 per cent. of those who live in cellars, are always absent, from sickness. Out of six schools in Liverpool, examined by Dr. Duncan, "containing 1442 scholars, 11 per cent. of scholars who lived in streets were frequently absent on account of sickness, 34 per cent. of those living in houses in courts, and 41 per cent. of those living in cellars."

Hard indeed is the fate of such children as these, who, after suffering from severe suffocation during the night and a part of the day in their own houses, are subjected to a similar, if not more cruel process in their school rooms, in which they may be said to be entrapped, and thus cruelly treated, under the show of kindness and regard for their welfare.

Dr. Lyon Playfair, in the report already quoted, says, with too much truth, that the architects of school-houses seem to have considered it sufficient, in the erection of these edifices, to provide a

certain number of windows and doors, without making any arrangements for ventilation independent of these. Consequently, in certain states of the weather, when ventilation is particularly necessary, the windows cannot be opened, so that the scholars are exposed to all the evil effects of inhaling a vitiated atmosphere.

Of seventy-five schools investigated by Dr. Fleming, the ventilation was tolerable, as far as it could be by windows and doors alone, in thirty-three, and bad in thirty-five. But twelve of these had play-grounds.

The examination of schools in other towns and districts completely corroborates the view of their bad structural arrangements. In Manchester, the blue-coat boys suffered from scurvy, which was removed, in a great measure, by an amended diet, and by ventilation of their dormitories after a fixed method.

The defects of construction are most obvious in the cottage schools, as they are called. They abound in all the large towns in England; and according to the Preston returns, they are used by about one-fifth of the children of the operatives. These cottage schools are generally situated in courts or dirty lanes, and surrounded by, and often themselves contain, filth of every description. Some were found over stables; some have their windows opening on exposed cess-pools; some even are found in cold and damp cellars. "In one case, thirty-six children were crowded in a small room above a shop belonging to the mistress, who had to leave her children at the call of every customer. Some of the rooms used as schools were so small that children had not room to sit down. In one instance, each scholar had an area to stand in of only 1 4-10 square feet, and a space to breathe in of 2 57-100 cubic feet." Messrs. Ewing and Harrison, in examining the cottage schools of Preston, found, in several instances, one portion of the scholars in the kitchen, and the other in the back-yard, seated on coals or blocks of wood.

The dame schools in Liverpool are of the same character as those just described. "With few exceptions, these schools are damp and confined; many are damp and dirty; more than one-half of them are used as dwelling, dormitory, and school-room, accommodating a family of seven or eight persons; above forty of them are cellars." Equally vile in their internal arrangements are the common schools of Liverpool. "So close and offensive is the atmosphere in many of them, as to be intolerable to a person entering from the open air, more especially as the hour for quitting school approaches." "Neither in Liverpool nor in Manchester was there a common day or dame school where there was a play-ground, in which the children could get the change of air and the exercise necessary for young persons." In Birmingham, the state of the dame schools was much better than in Manchester or Liverpool.

As conveying a good practical lesson, your reporter will introduce here the reply of Dr. Neil Arnott to the following question of the Commissioners on the Health of Towns:

"3,936. Do you not find that there is considerable difficulty in getting persons suffering from deficient ventilation to take the trouble that is necessary to understand the subject? Yes: they may tell their medical man, when he makes any representation to them on the subject, 'that ventilation is a hobby of his, and that hitherto people have got on very well without attending to it.' If they hear of such occurrences, as of 2,000 British seamen dying in one fleet, during the first American war, from fever and want of ventilation, it is not their care, and they cannot understand it. Thus, also, a few years ago, when in the great charity school at Norwood, containing seven hundred children, the greater part of these fell into ill health, and many died, really from imperfect ventilation of the house, it was believed by the public that the children were dying for want of food, and there was, consequently, a great outcry against the well-meaning man at the head of the establishment for not feeding the children properly. In truth, he was feeding them better than other proprietors of schools of the same class around London, but he shared the common ignorance of the subject of ventilation; and having so great a number of children in his establishment, the effects became more evident. The children recovered their health when the faults in respect to ventilation were pointed out and remedied. There were two or three medical men who commenced the outcry, showing that among medical men there were some who had not studied the subject sufficiently."

A still more recent and melancholy instance of the destructive effects of impure air from deficient ventilation has been recorded in the English Journals. In the pauper establishment in Tooting, no less than one hundred and fifty-five children died of cholera. This was what may be termed an acute termination to a chronical sanitary neglect. The following is strong, but too apposite language for the Tooting tragedy. It occurs in a notice of the subject in the Journal of Public Health, (February, 1849).

"Let us set aside all the inhumanity and brutal indifference which have been brought out in evidence—the hunger and thirst, the cold, the ill treatment, the uncleanliness, the diseases of filth and neglect, the itch, scald heads, the sore eyes, the running tetters, the scrofulous affections of the joints and abscesses, the thin shanks and pot-bellies, the diseased bowels, the foundation for the consumption of coming years, which were inflicted on these much-abused children—let us set all these retributive miseries, arising from most gross ignorance and fouler neglect, aside, and let us judge of 'the system,' by the regard paid to the primary want of Life, under all conditions, *the supply of pure air.* We are told

the children had not quite 136 cubic feet of respirable air for each child, or an amount equal to that which would be contained in a box five feet two inches every way. This supply would preserve life for eight hours, when the outraged laws of life would resolve the living frame into dead matter. In the boys' school-room, occupied for three hours, twice a day, there were 37 cubic feet of air for each boy."

The editor, in this article, had just before pointed out the ignorance of the laws of health on the part of the several Boards—Poor Law Inspectors, Guardians, Overseers, and Churchwardens—appointed to carry into effect the Poor Laws. He concludes the enumeration with noticing the Medical Officers of Unions, of whom he thus speaks: "Here, at least, it might be supposed that we had arrived at a corps of men professionally qualified to superintend health arrangements. Alas! annually elected—annually liable to dismissal—selected because willing to toil like a common soldier in a campaign, at barely more than a navigator's pay, they can raise but faint and feeble voices against the outrages which are continually perpetrated, and to which they are compulsorily made subservient."

The frightful mortality in the Philadelphia and Bucks County Almshouses, from cholera, in the summer of 1849, suggest the existence of a state of things near home which calls for a thorough reform, especially in procuring a better system of ventilation for the inmates of these and similar establishments.

Ventilation of Hospitals.—We know well, at the present time, how much the mortality is increased in hospitals and asylums of every kind by an impure air, notwithstanding there may be great skill on the part of the medical, and kindness on that of the other superintendents. But our better knowledge has not yet been generally applied to a removal, nor, in many instances, to a mitigation, of the admitted evils.

On this highly interesting topic, valuable suggestions have been made, and in some instances carried into practice, by the medical superintendents of some of the Asylums for the Insane. Dr. Luther V. Bell and Dr. Kirkbride may be instanced as prominent in the good work. The Association of Medical Superintendents of American Institutions for the Insane, at their meeting in Utica, in 1849, announced their unanimous opinion to be, "that the experiments recently made in various institutions in this country and elsewhere, prove to the satisfaction of the members of the Association, that the best means of supplying warmth in winter, at present known to them, consist in passing fresh air from the external atmosphere over pipes or plates containing steam at a low pressure, or water the temperature of which in the boiler does not exceed 212° F., and placed in large air-chambers in the basement or cellar of the building to be heated." They also declared,

"that a complete system of fixed ventilation, connected with such a mode of heating, was absolutely indispensable in every institution, like hospitals, for the ordinary sick or insane, and where all possible benefits are sought to be derived from these arrangements," and "that no expense that is required to effect these objects thoroughly can be deemed either misplaced or injudicious."

Dr. Kirkbride, who introduces the preceding opinions in his paper on *Heating and Ventilating Hospitals and other Buildings by Steam and Hot Water,* details some experiments on the subject, and the plan which, on his recommendation, has been carried out for warming and ventilating the Pennsylvania Hospital for the Insane, of which he is the well-known and esteemed medical superintendent. The most southern of the two additions made to the north wing of the Hospital for the Insane, in 1846, has, since that time, been very satisfactorily warmed by means of a mild hot water apparatus requiring little more air or attention than a common hot air furnace. But the most recent and the preferred plan for warming the wards and apartments in the Hospital, is by means of main pipes and coils of pipes holding steam, which traverse an air-chamber, and thus impart heat to it as the furnace does in the common method. The steam boiler is outside the building. "The most extensive experiment in heating by this mode of using steam yet tried in this country is that which has been in operation during three winters, in the New Jersey State Lunatic Asylum." The foul air flues lead to large ventilating shafts, near the bottom of which a large coil of steam pipe is introduced for the requisite rarefaction of the air, so as to insure its rise in and escape from the shafts into the outer air. By the apparatus that warms the building, steam is supplied for heating the bath-rooms, and for all other purposes, including cooking. A similar plan has been adopted in a part of the division of the Philadelphia Almshouse allotted to the Insane. In the Maine Hospital for the Insane, at Augusta, where the thermometer is often, for a considerable period, below zero, a steam apparatus for heating the building has been introduced with entire success. At the McLean Asylum, near Boston, a part of one wing is warmed by hot water. Thorough ventilation is also insured.

It is still common to speak of the evils of factory labour, and especially of the deficiency of ventilation. Many persons would be surprised to learn that a large number of the chief factories in England, at the present time, are better ventilated than the courts of justice, the churches, the schools, and places of public resort and amusement, both in that country and in the United States.

Drs. Ure, Thackrah, and W. Cooke Taylor, in England, and MM. Villermé and Benoiston Chateauneuf, in France, exhibit a view of the workings of the Factory system on the health of the operatives, very different from that generally entertained. The

subject, under its various aspects, would require more time than can be now given to it. On the main topic before us—ventilation—the effects of mere density of population, independently of employments unfavourable to health, are manifested in a comparison between the members of the higher grades of society, such as professional persons and gentry, and their families, in Manchester, and that of the mechanics, labourers, and their families, in Rutlandshire, an agricultural region with a relatively thin population. The average of death in these two classes was nearly the same.

Dr. Ure contends, that from the very nature of the machinery used in cotton mills, it is impossible to crowd the operatives, and especially those, nine-tenths of them children, who tend the open-spured mules. Mr. Harrison, the inspecting surgeon of the mills of Preston and its vicinity, in an official report, made some years ago, tells us, that in 1,656 individuals under eighteen years of age, employed in the mills, of whom 952 were employed in spinning-rooms, 468 in carding-rooms, 128 in power-looms, and 108 in winding, skewering, cops, &c., he found that the average annual sickness of each child was not more than *four days;* and that not more than four days, on an average, are lost by each child in the year in consequence of sickness. The average age at which the children of the district now referred to entered the factories, was ten years and two months; and the average age of all the young persons together was fourteen years.

As respects the growth and development of persons engaged in factory employment, Sir David Barry, in his Factory Commission Report, relates, as the result of personal observation, that many of the girls were beautifully formed, who had been from ten years to maturity in the mills.

On the subject of ventilation, M. Villermé states distinctly, after a careful calculation of data, that the great bulk of those employed in the cotton mills have a better supply of air at their work than in their homes, and better, also, than great numbers of other classes of work-people. Recent improvements in machinery have remedied, in a great measure, the former evils, on the score of health, to which one class of those engaged in cotton manufactures were exposed. The reference is to the *batters of cotton*, whose occupation was thought to compel them almost to the inhalation of much dirt and flue.

In reference to the alleged unhealthiness from the disagreeable odour evolved from oil and greasy materials in cotton mills, the French writer just quoted remarks: "Singular mistakes have arisen from attributing to such causes diseases induced by protracted labour, want of rest, insufficiency of food, and in bad quality, habits of improvidence, drunkenness, and, to say all in one word, wages below the actual wants of the recipient."

The high heat required in some of the cotton factory processes

is productive of erysipelatous inflammation about the head of the thigh, especially in fat persons; and also, more frequently still, of cold and severe inflammation of the chest, when, as so often occurred, the operatives were exposed to sudden chilling after their being heated.

The woollen manufacture is, M. Villermé thinks, less prejudicial to health than that of cotton, as the batting of wool gives rise to much less fine dust than the latter article. The spinning of wool requires, moreover, a moderate temperature.

On the same authority we learn, that much of the ill health experienced by the persons engaged in the manufacture of silk, depends on their bad clothing, and want of cleanliness. It is only the early processes of the silk manufacture which can be said to be decidedly unhealthy.

Dr. Cooke Taylor, in "Notes of a Tour in the Manufacturing Districts of Lancashire," brings facts to corroborate the opinion of Dr. Ure, as to the little deleterious influence exerted on operatives in cotton mills. "I would be very well contented," he says, "to have as large a proportion of room and air in my own study as a cotton spinner in any of the mills of Lancashire."

But let us not, as has been elsewhere said, push conclusions beyond legitimate warrant, by denying, with Dr. Ure, that factory labour in town does not contrast unfavourably with agricultural pursuits. It has been shown, as we learn from Mr. Chadwick's most valuable Report on the *Sanitary Condition of the Labouring Population of Great Britain*, that fewer recruits of the proper strength and stature for military service are obtainable now than heretofore from Manchester. Mr. Chadwick was informed, "that of those labourers now employed in the most important manufactures, whether natives or emigrants, in that town, the sons who are employed at the same work are generally inferior in stature to their parents. Sir James McGrigor, the Director-General of the Army Medical Board, stated to me the fact, that a corps levied from the agricultural districts in Wales, or the northern counties of England, will last longer than one recruited from the manufacturing towns, from Birmingham, Manchester, or near the metropolis. Indeed, so great and permanent is the deterioration, that out of 613 men enlisted, almost all of whom came from Birmingham and five other neighbouring towns, only 238 were approved for service." "Birmingham, however, it will be remembered, is not the seat either of the cotton, wool, or silk manufacture; it is yet one of our great towns. It would be tedious to reiterate the obvious inference." (*Bulletin of Medical Science*, 1843, and *British and Foreign Medical Review*, April, 1843.)

This last observation brings us back to our actual topic, ventilation. To a want of it must we trace much of the suffering and

disease, and the entailed physical and mental infirmities, so obvious in all densely populated districts. As an opportunity will not be allowed in this report for enlarging on the sanitary effects of the factory system, it was thought that these incidental remarks on the subject would not be deemed out of place.

In few edifices of public assemblage is ventilation more neglected than in *churches*. The Rev. Mr. Kirk, in his discourse on the occasion of laying the foundation of a new church in Boston, in 1843, remarked, with equal emphasis and truth, "When we observe the delicate exactness with which God mingles the component parts of the atmosphere, as it issues from His laboratory, and how the re-breathing of the air affects the lungs and brain, and through these the mind and heart, we are assured that the introduction of pure air, and the ejection of the vitiated atmosphere, have an equally important bearing on the health of the soul and on that of the body." In his commentaries on this theme, in the *Bulletin of Medical Science*, (1843,) your reporter accused the church-goers of a belief that the laws by which our physical nature is governed, laws, of course, established by the Deity himself, are suspended during religious exercises in the churches: "Else why do they frequently sit, sometimes for hours, voluntarily deprived of the reviving influence of fresh air, and breathing, again and again, the original supply in the building, until its deteriorating effects are manifested in all their functions—circulation, respiration, the senses, intellect, and sentiments? Wearied, oppressed, giddy, with palpitating hearts and hurried breathings, how many have mistaken these really disturbed states of the physical man for those resulting from the workings of the Spirit; and have retired to their homes, full of terrors for the state of their soul, when, in reality, they were suffering from a disorder of their corporeal functions, induced by the impure blood circulating through their system." How comparatively seldom do the sober reminiscences and the reflections of the morning, partake of the parti-coloured imagery in their minds, just after leaving a crowded and badly-ventilated church on the preceding evening!

Dr. D. B. Reed, one of the Commissioners on the Health of Towns, is also the author of a work entitled, "*Illustrations of the Theory and Practice of Ventilation, with Remarks on Warming, Exclusive Lighting, and the Communication of Sound.*" This gentleman visited numerous churches in hot weather, to observe the effects of bad air on the congregations. He gives the result of these in a very graphic sketch, which we regret not having room to insert. It will be found on page 42 of Dr. Reed's volume. The brain, poisoned by the deleterious air in a full and badly-ventilated church, becomes unfitted for the exercise of its functions, and its possessor, according to the degree of his religious sensibilities, will either accuse himself of apathy, or the preacher

of dulness. Both are liable to be true, and from the same cause —a depressing and stupefying air, impregnated with carbonic acid and other exhalations from the lungs and skin.

As regards *hospitals*, it has been well remarked by two French writers, (MM. Montfalcon and Poliniére, *Traite de la Salubrite dans les Grands Villes, suivi de l'Hygiene de Lyon:*) "The more numerous and diversified are the causes of vitiated air in a hospital, the greater is the necessity for vigilance in obviating it. The very luxury of appliances for a good sanatory state is, one may say, a measure of strict necessity; it ought to be carried to the very extreme. The sick in hospitals ought, above all others, to profit by the discoveries in hygiene; they have a special right to be the first to receive the benefit of the application of physics and chemistry to the purification of the air, of water, and of the soil. We cannot do enough to assuage the ills of the poor man lying in his bed of pain, and to increase his chances of recovery."

"Every patient ought," these writers think, "to have at least three hundred cubic inches of pure air, per hour, at his disposal; every ward of a hospital ought to be so well ventilated, that the most delicate sense of smell could not detect any unpleasant odour, and that the temperature should be always kept at 60° Fahrenheit."

It is not too strong language to say, that the renewal of the air in hospitals, which implies adequate ventilation, is a question of life or death; every hospital in which the atmospheric air remains vitiated, so far from being a benefit to the poorer classes, becomes a public calamity. The former condition of some, we might say of most, of the larger hospitals in Europe, proves too well the truth of this assertion. The old Hotel Dieu of Paris, with three, and even five, patients in the same bed, and a corresponding neglect of all sanatory measures, presents itself to the memory in this connection. In the space of four years, ending in 1784, in a badly-ventilated house, the Lying-in-Hospital in Dublin, there died 2,944 children out of 7,650; but after freer ventilation, the deaths, in the same period of time, and in a like number of children, amounted only to 279.

The quantity and pestiferous nature of the exhalations continually given out in the wards of a hospital occupied by the sick, is strikingly shown in an observation made by the French writers just quoted, on the air in the upper part of the dome of the Hotel Dieu of Lyons. The four great wards represent a cross, and they meet in a great vestibule surmounted by a dome and cupola, and having in its centre an altar of marble, over which is a smaller dome. From the wards communicating with the vestibule there escapes into the latter the impure air and exhalations, which find their way afterwards into the dome and cupola, as into secret funnels, and thence, through suitable openings, are lost in the ex-

ternal air. The mass of mephitic gas which is accumulated and finds exit in the domes is incredible, and no one could form the least idea of it when visiting the wards, and breathing an air exempt from all bad smell in the vestibule. But let workmen at this very time be required to go into the cupola, especially near its top, and they will suffer so much from the close and foul air which has risen from below, that they will be unable to continue their task for, at the longest, more than an hour. Sometimes, even, after half hour's stay in this infectious medium, they come away pale and oppressed, and so disordered that sometimes they sink down in a state of syncope. Many workmen are obliged to succeed one another to perform the work of a single man.

Desisting, for the present, from any farther enumeration of public edifices in which persons assemble for specific purposes, and in nearly all of which systematic ventilation is either neglected or imperfectly carried out, let us direct our attention to the over-crowding of private dwellings, and the evils consequent upon it. The evil is not confined to the houses occupied by the inhabitants of towns, but it also, especially in Europe, we believe above all, in Great Britain and Ireland, is flagrant in the cottages in rural districts. In several towns in England and Scotland, it appears that, while the population has greatly increased, the number of houses remains the same, or if there have been an augmentation of the dwellings, it is for the benefit of the small number of the affluent; the increased crowding still going on among the poor.

Captain Willis, in his examination of the cellars in Manchester, to which reference has been already made in this report, found that there were

1,500 cases in which 3 persons slept in the same bed.
738 " " 4 " " " "
281 " " 5 " " " "
94 " " 6 " " " "
27 " " 7 " " " "
2 " " 8 " " " "
38 without beds.

In Preston, out of 442 dwellings examined in the most unhealthy parts of the town, and inhabited, at the time of making the inquiry, by 2,400 persons, there were 852 beds.

In 84 cases 4 persons slept in the same bed.
28 " 5 " " " "
13 " 6 " " " "
2 " 7 " " " "
1 " 8 " " " "

In Portland Town, there are thirteen or fourteen families in a house, and it is of small dimensions.

In Greennock, it is not unusual to see ten or twelve human beings occupying a room not as many feet square. At Tranent, Dr. Keith says, "Crowding fearful. I have seen six or eight sleeping in one apartment, with every crevice stopped, and have more than once been nearly suffocated by entering the apartment, even after several of them were up and out." In the Ampshill Union, the following instance of crowding is related, (Chadwick *op. cit.*:) "A man, his wife, and family, consisting in all of eleven individuals, resided in a cottage containing only two rooms. The man, his wife, and four children, sometimes five, slept in one of the rooms, and in one bed, some at the foot, others at the top; one a girl above fourteen; another a boy above twelve; the rest younger. The other part of the family slept in one bed in the keeping-room, that is, the room in which their cooking, washing, and eating were performed. How could it be otherwise than that they should be sunk into a most deplorable state of degradation and depravity." Frequently young men and women sleep promiscuously in the same apartment. In one case, mentioned by Mr. Fox, occurring in the parish of Mottisfont, "there were fourteen individuals of one family together in a small room, the mother being in labour at the time: and in the adjoining room seven other persons sleeping, making twenty-one persons in a space which should be occupied by six persons only at most. Here are the young woman and young man of eighteen or twenty years of age, lying alongside of the father and mother, and the latter actually in labour."

The Committee which reported on the Sanitary Condition of Philadelphia to the Board of Health, in October, 1849, speak of a district in one of the suburbs, but without naming it, in which there is "an excess of vagrant population, half-fed and half-clothed, crowded together in almost untenantable houses, and in open and humid cellars, located in narrow streets and narrow alleys, and pent-up courts, badly-ventilated and badly-lighted."

Again: "It is no uncommon thing to find two or three families occupying one house of ordinary dimensions, in the more densely populated districts, and in courts and alleys; and in some neighbourhoods, especially those already referred to, there will be found a family, consisting of five or six individuals, in every room in the house. The ventilation of these houses is better than can be conceived."

It must be a matter of much less surprise that in such a crowded population, fever and cholera should commit the greatest ravages, than that human beings thus circumstanced can live at all. More deplorable still than the medical is the moral aspect of this state of things. All sense of delicacy is gone, all perceptions of the proprieties of personal intercourse and the reserve that ought to prevail between the sexes are lost. The restraints imposed by

consanguinity on even much personal familiarity are unknown, and the gross crime of incest is committed without horror, and remembered without remorse. Prostitution has been traced to sexual intercourse begun in this promiscuous sleeping together of adults of both sexes.

Dr. J. Southgood Smith, in his evidence before the Commissioners, is not content with pointing out evils, but suggests a remedy in relation to this painful theme. His concluding remarks are forcible and startling:

"I wish particularly," Dr. S. Smith states, "to draw attention to the importance of having a certain number of rooms in the dwelling-houses of the poor, though I am aware of the difficulty of legislating on this matter, and of the still greater difficulty of carrying out practically what the legislature may declare to be its intention and will. Still it is right, that the attention of the legislature and other public bodies should be called to the physical deterioration and moral degradation which results from the want of proper room in the dwelling-houses of the poor. Besides the evidence on this subject which has been published in the report on the sanitary condition of the labouring population, a large mass of evidence to the same effect will be found in the reports of the sub-commissioners under the Children's Employment Commission, and in the statements of a great number of witnesses examined by them. Instances such as the following are given: 'A mother and her son, being an adult, sleep in the same bed. Grown-up females and unmarried young men sleep in the same room. A man, his wife, and his wife's sister, the latter being an adult, sleep together in the same bed.' I have myself seen a young man, twenty years of age, sleeping in the same bed with his sister, a young woman sixteen or seventeen years old. That incestuous intercourse takes place under these circumstances there is too much reason to believe; and that when unmarried young men and women sleep together in the same room, the women become common to the men, is stated as a positive fact; but I regard another inevitable effect of this state of things as not less pernicious: it is one of the instances which, for want of a better term, may be called *unhumanizing*, because it tends to weaken and destroy the feelings and affections which are distinctive of the human being, and which raise him above the level of the brute. I have sometimes checked myself in the wish, that men of high station and authority would visit these abodes of their less fortunate fellow-creatures, and witness with their own eyes the scenes presented there; for I have thought the same end might be answered in a way less disagreeable to them. They have only to visit the Zoological Gardens, and observe the state of society in that large room, which is appropriated to a particular class of animals, where every want is relieved, and every appetite and

passion gratified, in full view of the whole community. In the filthy and crowded streets, in our large towns and cities, you see human faces retrograding, sinking down to the level of those brute tribes; and you find manners appropriate to the degradation. Can any one wonder that there is, among these classes of the people, so little intelligence—so slight an approach to humanity—so total an absence of domestic affection, and of moral and religious feeling? The experiment has been long tried on a large scale with a dreadful success, affording the demonstration, that if, from early infancy, you allow human beings to live like brutes, you *can* degrade them down to their level, leaving to them scarcely more intellect, and no feelings and affections proper to human minds and hearts."

Dr. Lyon Playfair adduces instances of the crowding of persons in the same room, without even the plea of necessity. They are not, he informs us, the most extreme cases of the kind.

The *workshops* of persons engaged in various mechanical employments are terribly deficient on the score of ventilation, and subject, in consequence, their inmates to much suffering and disease. Dr. T. Southgood Smith, in reference to the crowding together of journeymen tailors in the same shop, tells of his having heard of a room, in London, sixteen or eighteen yards long, and seven or eight yards wide, in which eighty men worked together; "the men were close together, nearly knee to knee. In summer time, the heat of the men, and the heat of the irons, made the room twenty or thirty degrees higher than the heat outside; the heat was then most suffocating, especially after the candles were lighted. "I have known young men," says this witness, "tailors from the country, faint away in the shop from the excessive heat and closeness; persons, workingmen, coming into the shop to see some of the men, used to complain of the heat, and also of the smell, as intolerable, sit as quietly as they could, and the perspiration run from them. It is of frequent occurrence in such workshops, that light suits of clothes are spoiled from the perspiration of the hand, and the dust and flue which arise during the work. I have seen fifty pounds' (two hundred and fifty dollars) worth of work spoiled in the course of the summer season from this cause. In winter these places are still more unhealthy, as the heat from the candles and the closeness are much greater. Any cold currents of air which come in give annoyance to those who are sitting near the draught. There is continued squabbling as to the windows being opened; those who are near the windows, and who do not feel the heat so much as the men near the stove, objecting to their being opened. The oldest, who had been inured to the heat did not like the cold, and generally prevailed in keeping out the cold—that is, the fresh air." The effects of continued

exposure to this impure and deleterious air were to drive away many before their hours were over, and to take away the appetite of those unaccustomed to the place. "The natural effect of the depression," using the language of the witness, "was, that we had recourse to drink as a stimulant; gin being taken instead of food. I should say the greater part of the habit of drinking was produced by the state of the place of work, because when men work by themselves, or only two or three together, in cooler and less close places, there is scarcely any drinking between them."

Large sums are spent for the cure or temporary palliation of distress in various forms among workmen and their families; but a system of wise prevention, which would not cost a tithe of the money so spent, does not seem to occur either to the parties themselves or to those who kindly volunteer advice and assistance for their relief. The loss of time by sickness, and the diminished bodily vigour, and consequent slowness in working, are not thought of in a general economical estimate. "If," as we read in a statement on this head, in reference to the class of workmen just spoken of, "the employers and the men had been aware of the effects of vitiated atmosphere on the constitution and general strength, and of the means of ventilation, the practicable gain of money from the gain of labour by that sanitary measure could not have been less, in one large shop, employing two hundred men, than £100,000, ($500,000.) Independently of subscription of the whole trade, it would diminish their working period of life, and have been sufficient, with the enjoyment of greater health and comfort by every workman during the time of work, to have purchased for him an annuity of £1 ($5) per week for his comfortable and respectable self-support, during a period of superannuation, commencing soon after fifty years of age."

What has been said of the journeymen tailors, applies with too much force to the persons of the other sex who work in milliner and dressmaker shops, with the additional aggravation of their being sometimes kept up late at night to finish the dress promised for the next day. Even when working alone in their small and confined rooms, from morn to night, in a half-bent posture, they are objects of deserved pity, as victims to the sin of a neglect of hygiene.

Dr. Guy, both in the evidence given before the Commissioners, and on other occasions, points out the greater frequency of pulmonary consumption among those habitually exposed to a close and impure air, and especially if, at the same time, they are deprived of all active exercise. The saving nature of this latter is evinced in the less liability of pressmen than compositors to consumption.

Public Lodging Houses are another prolific source of disease and vice. They are, in nearly all large cities, the nightly resorts not only of the migrating labourer and travelling artizan, but, also, of the lower mendicants, thieves, and prostitutes. These resorts are well known to the criminal police. In 1831, Mr. James knew a house of this description, in London, to contain 126 persons, many of them women and children, and perhaps not more than a dozen beds in the place. At the census of 1841, there were not more than 30 or 40 in any of these houses; "still these numbers crowd the houses most annoyingly." It is no uncommon thing, as we learn from Dr. Duncan, (*Report on the Sanitary State of Liverpool,*) for the keepers of lodging houses to cover the floor with straw, and allow as many human beings as can manage to pack themselves together to take up their quarters for the night, at the charge of a penny each. The havoc made by the cholera in the lodging houses at Manchester, in 1832, was terrible. In some of these houses, as many as 6 or 8 beds were contained in a single room, which are crowded promiscuously with men, women, and children. Dr. Howard, after showing the lamentable extent to which they become the hotbeds of *febrile* diseases of the most violent and fatal character, owing, mainly, to their filthy and unventilated condition, thus describes the morals of their frequenters, and their malign influence in this way on the young and inexperienced: "They serve as open receptacles of crime, vice, and profligacy, and as nurseries in which the young and yet uninitiated become familiar with every species of immorality. They are the haunts of the most depraved and abandoned characters, as well as the most miserable and suffering objects of the town, (*Manchester,*) and constitute one of the most influential causes of the physical and moral degradation of our labouring population."

Unless we are misinformed, the investigations made by the Board of Health of Philadelphia, in 1849, have revealed a state of things not much behind, although on a smaller scale, than those described in the foregoing extracts; and, as regards New York, Dr. Griscom's report, made a few years ago, exhibits a still darker picture. With the warnings on the other side of the Atlantic to deter us, we ought to have kept clear of these nuisances entirely. Let us, as we have imitated the people of Great Britain for evil, imitate them also for good, by instituting the same searching inquiries into the nature and extent of these physical and moral corruptions, that are recorded in the proceedings of the various Parliamentary committees and Royal Commissioners.

In Glasgow, the lodging houses have been subjected to regular municipal supervision and ordinance, and, as we are told, with excellent effects.

It is easy to conceive the injury to health from defective ven-

tilation, where the particles of various substances and gases are given out during the process of manufacture, and mixed with the air rendered impure by the pulmonary and cutaneous exhalations of the persons employed. Those who work in coal-pits and mines are thus exposed, and scarcely less in their own dwellings.

After the gloomy pictures which have been placed before you, it is a grateful change to see the successful attempts at the erection of model houses in towns, and model cottages in the country, for the use of the working classes. The new buildings, though small, are on a footing of comfort and sanitary arrangements, as to a due supply of water, warming, and ventilation, if not superior to larger mansions inhabited by the wealthy. The trials so far made justify the observation of the Rev. Mr. Girdlestone, who has taken an active and praiseworthy part in sanitary reform, that one of the most efficacious means of elevating the condition of the labouring classes would be the improvement of their dwellings.

At Birkenhead, opposite Liverpool, dwellings have been erected in a style so neat as to approach to elegance, by the Dock Company, for the accommodation of the workmen likely to be required for the construction of the docks and warehouses of this new and flourishing town. Tenements have also been erected at the same place by Mr. William Laird, called Morpeth Buildings, and others by Mr. Robert Hughes; the former consisting of sixty-four, the latter of seventy, dwellings. The first is built on the Scotch plan, in flats, and constitute eight blocks, each block consisting of eight dwellings. The blocks are four stories high, with no sunk flat or cellar, and each flat is divided into two dwellings. Each dwelling consists of three rooms, kitchen, parlor, and bed-room, or two bed-rooms. The kitchen is provided with a range and oven. Separated from the kitchen, by a well-fitting door, is a water-closet, with an abundant supply of water for this and all other purposes. Through the centre of each block, from top to bottom, runs a square shaft, containing the water and gas pipes belonging to the eight dwellings. A small iron door, about ten inches square, is fixed in one corner of a recess, close to the ground, through which all the dust and dirt is swept; the dust-shaft receives the dust from all the eight dwellings by eight similar openings, and descends to a very large dust-cellar beneath the level of the house, from which it is removed at stated periods. Each house is ventilated by two air-bricks—that is, a space equal to the size of a brick is left open for the admission of air, covered within and without by an iron grating, and capable of being closed by an iron shutter, if necessary. One of these openings is placed near the floor, for the admission of fresh air; the other near the ceiling, for the escape of vitiated or heated air. There is only one appliance to health wanting in these houses, viz., the bath.

Grievous complaints are made of the injurious effects on health of the window-tax in Great Britain, by which a great deal of light and sun, those genial and necessary stimulants to animal life, are shut out, or admitted in such stinted proportions, as to be little better than darkness visible.

Model lodging houses have likewise been built in London and other places, with the most satisfactory results. The houseless, destitute, and very poor are comfortably lodged, at the same time that they escape the contamination both of disease and of vice, for a very small sum, but which is remunerative to the proprietor. At a meeting of the *Society for Improving the Condition of the Working Classes*, held two years ago, Prince Albert presiding, it was stated by Lord Ashley, that the new lodging houses gave nightly lodging, with every accommodation for cleanliness and decency, at the rate of four pence (eight cents) a night; so entire was the success, and so remunerative the profit obtained, that upon a sum of about 13,000 or 14,000 pounds sterling (65 to 70,000 dollars) expended on these lodging houses, they were now receiving an income of very nearly 1,500 pounds (7,500 dollars) a year. That was a truly princely sentiment of Prince Albert, uttered by him on his taking the chair, when he says: "Depend upon it, that the interests of the often-contrasted classes are identical, and it is only ignorance which prevents their uniting to the advantage of each other."

Means of Ventilation.—Some of the terrible effects of neglected or even defective ventilation having been described, it would be right to indicate the different processes which have been used or recommended to obviate the evil, and insure the desired introduction and movement of fresh air. Dr. D. B. Reed, both in his work before alluded to, and in his report to the Commissioners in the Northern Coal Mine Districts, enters fully into this interesting question. Coloured engravings and diagrams, in the latter, serve to give a better understanding of his views and suggestions.

"The state of ventilation in any apartment," he tells us, "depends, essentially on three conditions: the quality of the external air; the quantity that can be made to flow through it in a given time, including the mode of distribution and the regulation of which it is susceptible, whether in regard to the temperature communicated to it, or the force with which it impinges on the system; and its freedom from any noxious ingredients that may be developed by lamps, candles, fire-places, or by any other special cause. Where sanitary measures have secured the purity of the external atmosphere, by effective drainage, cleansing, and prevention of nuisances, one-half of the remedy may be secured; and, without such measures, no system of ventilation can be successful."

"Were it more generally known," observes Dr. R., "that the

movement of an ascending current from lamps is always accompanied, in non-ventilated apartments, by a proportionate descent of vitiated air, which may have previously supported combustion, and that the descent, though limited at first, may suddenly reach the floor, greater anxiety would be manifested to give vent to such products by a superior aperture." But this remark is in anticipation of what ought first to have been stated, viz., that if an aperture for the admission of air of sufficient magnitude be always left open, then it will only be necessary to diminish the extent of opening left for the discharge, by a superior aperture or like opening in the fire-flue, according to the relative rapidity with which it may be required that the ordinary ventilation or the heating power of the chimney shall act.

Dr. Guy, with much justness, says, that no system of ventilation can come into general use which does not prevent draughts, which is not cheap, and which interferes in any great degree with existing structural arrangements.

Dr. Hutchison, in a series of papers "On Ventilation in General," in the *Journal of Public Health*, points out three things to be considered in ventilating a room: "1st. An ingress opening for air; 2d. An egress, ditto; 3d. The application of a moving power for air." Dr. H. adverts to the neglect by a rich Amphytron to give his guests air, at the time he is providing in abundance the visible food; and, by such neglect, they are subjected to a weakened digestion. "How seldom," continues this writer, "we bring a matter home to ourselves! Committees meet and determine to ventilate an hospital; this is absolutely necessary; yet not one of these men may have any particular arrangement for ventilation at home. We have listened to a society detailing the 'horrors' of a tailor's workshop—of the crowded, close room of the poor working artizan—of men being suffocated. The members discussed such matters, whilst they were themselves nearly in a state of syncope or fainting for want of fresh air, in the very room wherein all hands were expected to be thinking upon the importance of ventilation."

Dr. Hutchison begins his account of the *Ingress Opening for Air*, by remarking, that all places or chambers must have communication with the external air, from which they are to be supplied. All chambers should receive the air below the level of the head of the inhabitant, and this air should be carried away at the highest part of the chamber, in the ceiling or immediately below it.

The ingress air should be low down; and, while entering, it should be so disposed or broken up into small streams or thin sheets, that no draught can be felt by the inmate of the chamber. It is necessary that the air should be admitted imperceptibly, and so as to receive the natural *radient* heat of the chamber as quickly as possible.

Perforated floors have been adopted by Dr. Reed in the House of Commons, this being covered again by hair-cloth, so that the supply of air might be broken up into small currents. The objection to this arrangement is, that the air not only brings with it all the dust, and dirt, and taint from the feet, but it likewise is directed immediately upon this part of the body, and many persons, as it is, suffer from "*cold feet.*"

In large public buildings, as churches and chapels, where there is generally some underground convenience for directing air through some favourable quarter, below the floor, into the body of the building, and that in particular spots not near the feet, as in the aisle, this system of perforated floors may be found to answer. In private rooms, there remains only the side wall for ingress air, and the best place appears to be the top of the skirting board which surrounds the room. A slit behind this board, and between it and the wall, only the one-eighth of an inch wide, would, in a room twelve feet square, give an ingress of nearly one and a half square feet, enough for a room of that dimension, when not crowded with persons. The ingress channel for air at the Hospital for Consumption is in this position; the slit is half an inch wide, which gives an opening, in a room of nearly twelve feet square, of nearly two square feet.

Air, continues Dr. Hutchison, whose descriptions we are now repeating, may be broken up into a sheet-like form by other means. Thus, for example, let an opening of six inches in a foot be protected by a shield or disk, say two inches larger than the aperture. The external air, in impinging against the side of this shield, is split up into a thin circular radiating sheet, and at a short distance below, not more than two feet, a person cannot feel cold air entering, nor can the hand detect a draught at eight or ten inches distance from the edge of the disk. The sheet of air may be modified according to the distance of the shield from the aperture. A still further precaution has been used by Dr. Guy, who adopted this practice for admitting air through a window pane of glass. It was, to have the sides of a close-fitting shield perforated, and thus to have the air broken up into jets.

The air behind the skirting board may come from the passage by a suitable communication, or, better still, from without, and its supply should be controlled by a "damper."

The *Egress Openings for Air* are required to be of some valvular form, whether they lead into a chimney flue or into the external air, because air, except under powerful and quick motion, will, from any cause, regurgitate into the chamber. Ingress air openings need no valvular arrangement.

Dr. Hutchison treats of only two kinds of valve: one for allowing the air of the room to escape immediately into the atmosphere without, and the other for admitting the air into some internal

flue or chimney; in other words, an external valve and an internal valve.

The author, under the head of *External Valve*, recommends highly and gives a description, with diagrams accompanying it, of a valve invented by Mr. Oliver. "It is applicable to the external part of any house or building whatsoever." Your reporter will not repeat the verbal description of this instrument, as it could not be understood without the aid of the diagrams. He must content himself with referring the inquirer after more detailed information to the Essay, No. X., of Dr. Hutchison, in the 2d volume of the Journal of Public Health.

By the *Internal Valve for Egress Air*, we merely signify, says Dr. H., some valvular machine, opening into some heated flue or chimney which may pass up the side of the chamber. The internal valve is, therefore, chiefly applicable to private rooms, or buildings constructed on a similar system. Upwards of fifty years ago, Franklin told us of the advantageous system of making a communication into a smoke flue, near the ceiling of the ward of the Pennsylvania Hospital, and that such opening, together with another in each door of the ward, made them all "perfectly sweet." Of late years, Dr. Arnott introduced a balance valve to our notice for this purpose, fixing it near the ceiling, and communicating with the smoke flue. The valve differs in size from nine by five inches, to twelve by seven inches; but since then, Mr. Ewart has constructed a more simple and effective valve, for the trifling cost of four or five shillings, (about a dollar,) which has the valve composed of oiled silk. It is a frame, in which are six large openings, admitting the egress of air more freely than the balance valve of Dr. Arnott.

It is found necessary to close up the valve, either upon lighting the fire, or in cold weather, or when a room is first inhabited, or, finally, if the chimney should be on fire. To meet these contingencies, Mr. Ewart has constructed a slide to draw up and cover the whole aperture.

In constructing a house, it is best, as Dr. Hutchison advises, to introduce a distinct flue for air.

The plan of ventilation through openings with shields or disks before them, has been modified by Mr. Leather, of Sheffield, as we learn from his evidence before the Commissioners. He introduced it for supplying the day and bed-rooms of the Eccleshall Bierlow Union Poor House with fresh air; and, as he says, answers the purpose admirably. "An opening is to be made in the outer wall, and a flue carried from it, between the floor timbers, to the middle of the ceiling, where the air passes into the room; in order to prevent the current of air from rushing downwards, the aperture in the ceiling is masked by a large circular iron plate. The purpose of this has been already explained. It

is fixed on a screw passing through its centre, and by turning the plate round, the aperture may be closed or opened little or much, and the supply of air regulated at pleasure.

Mr. Toynbee, surgeon to the St. George's and St. James's Dispensary, mentions, in his evidence before the Commissioners, the gratifying fact, that he is honorary secretary to a committee of the Governors of the Dispensary, who have charge of a Samaritan fund, one object of which is to improve the ventilation of the apartments of the sick poor, as one of the most important curative means. A better object for the formation of a society here at home could hardly be pointed out.

Mr. Toynbee describes two kinds of ventilators. The first is, he tells us, for the admission of external air through the windows. It consists of a plate of zinc, very finely perforated with two hundred and twenty holes to an inch. The size of the window ventilators varies from twelve to four inches square, according to the size and construction of the room. They are generally introduced in the uppermost portion of the window, and in the corner pane the farthest from the fire-place. These fine orifices prevent the air coming in with a rush, which would occasion discomfort, and they tend to diffuse the air equably and gently through the apartment.

Your reporter has frequently recommended, with good effect, a ventilator of fine gauze wire, inserted in the place of the upper pane of a window the most remote from the stand of the workman in his shop, or from the bed in a chamber.

It would be entirely too limited a view of the operation of this ventilator to regard it as useful merely for the admission of the external air. The experiments of Dutton, Graham, and J. K. Mitchell show that there is continually going on an interchange of vapours and gases, so that they are slowly diffused through each other, whatever may be their difference in specific gravity and the nature of the separating medium, provided it be not actually air-tight. This mutual action or power of penetration, one into the other, promotes natural ventilation, and tends to the discharge of vitiated air in every place in which it is prone to accumulate, and the entrance of the external atmospheric air through every opening, however minute, into the interior of every description of apartments. Hence, when a perforated plate of zinc or a fine gauze wire is interposed between the internal and the external air, there begins immediately an interchange between them; the air of the room passing out, and the air of the atmosphere coming in, and this even where internal and external temperatures approximate so closely as to reduce the movements that commonly ensue between the air within and that without. Even when the common conditions are reversed, as when a higher temperature prevails externally than is found within, the power

of mutual penetration between different gases and vapours never ceases to reduce the intensity with which they be prone to accumulate in any given place, provided a communication be maintained between it and the external atmosphere. This view of the subject taken by Dr. Reed is, we have a right to believe, the correct one. It is on the same principle that Jeffrey's respirator acts, by mitigating the coldness of the external air, while it allows of the escape of the internal air during respiration, when this instrument is attached to the mouth and nose.

Mr. Toynbee mentions a cheap chimney ventilator, contrived by Dr. Arnott, and which is similar to that of Mr. Ewart, as described by Dr. Hutchison, and to which your attention was just now directed. It consists of a square iron tube, of from three to six inches in diameter, and so long that the outer orifice should be flush with the wall of the apartment, and the inner one enter the chimney. These tubes are usually from four to six inches in length. At the orifice entering the room, there is either a plate of perforated zinc or a piece of fine wire-work, from the upper and back part of which hangs a piece of ordinary or oiled silk, which acts as a valve, so as to allow the warm and vitiated air to pass up the chimney, and prevent any smoke from entering the room.

Mr. Toynbee details instances of the great benefit to the feelings and health of the inmates of different rooms and shops into which he had introduced the ventilator. Sometimes complaints were made of cold felt by the occupants of the ventilated rooms, but this was owing to the disproportionately large size of the ventilators. The annoyance of a smoky chimney is removed by this mechanism.

In the dwellings of the poor, who will seldom, of themselves, attend to ventilation, or even continue any means for this purpose placed at their disposal, Mr. Horkery, in his evidence before the Commissioners, recommends the following plan: It is, "that a sweet-air flue should be made within the outermost jamb of every chimney breast, from the bottom to the top, and opening into the outer air, free from communication with the smoke flues, and not liable to be contaminated by them. This should open out at the lowest level again, either directly under the floor, or by a horizontal flue with a grated mouth, so that it may be fed with fresh air at both ends. Every fire should be fed, by an opening from such a flue, behind the cheeks and back of the grate, with the fresh air; perforations underneath the fire-grate admitting it to the fire, and other perforations in the cheeks admitting it to the room generally. Ninety-nine in a hundred would never suspect the mode of access of the outer air, and they would breathe fresh air in spite of themselves, and without knowing where it came from."

Dr. Reed thinks that a well-constructed window, capable of being opened above and below, realizes, when the fire-place is well arranged, all the essentials for effective ventilation in the apartments or tenements occupied by the poorer classes. He admits, however, that windows are chiefly to be trusted to when the weather is not severe, and when large supplies of air are required; "but for that more minute ventilation which the system requires and tolerates in the severity of the winter's cold, and at a time when the dryness of the air promotes rapid evaporation both from the skin and lungs, a much less extended opening is required, and one capable of more minute and delicate adjustment to the ever-varying circumstances of the case than a window can be made to command." There is a perpetual movement of air around the human frame during life, which, if too great, is complained of. A very gradual movement of cold air is better borne than a rapid one of a warmer air.

In Great Britain, the public health has suffered greatly by the window-tax, which has caused many windows to be closed up in old houses, and has prevented the requisite number in new houses. Not only is the introduction of pure atmospheric air, but also of light, that genial and necessary stimulus to nearly all animated nature, cut off by this means.

In speaking of the wants and ignorance of the poor on the score of ventilation, it must not be supposed that this class is the only sufferer. The wealthy and the luxurious often manifest equal ignorance, and suffer from the same cause. In houses of recent construction, the neglect of ventilation is extreme, as far as regards recourse to any other means for preserving it than the windows of the rooms. All the chimney-places are hermetrically sealed by slabs of marble, and when the flue by which hot air is introduced for warming the apartment is closed by a damper, as at night and in the summer months, there is no aperture either for the admission of fresh air from without, or for the escape of foul air from within. During the night, the windows and doors are closed, and the supply of air in the room, fitted for respiration, becomes exhausted long before morning, especially if, as is so commonly the case, there be several persons sleeping in the same room. Headaches, restless slumbers, nervousness of various kinds, palpitation, oppressed breathing, and loss of appetite are no unusual effects of defective ventilation in the houses of the wealthy, who, at the very time, may be commiserating the poor for their small, close, and badly-aired apartments. It is indeed high time that architects should think of constructing houses in which the inmates could live without an hourly infraction of the laws by adherence to which, alone, they can enjoy health and serenity of mind. Benevolent individuals and societies have taken the state of the defective lodgings of the poor into conside-

ration, and have set about, in some instances with entire success, the devising and execution of the needful remedies. Let us hope that the rich will come in for a share of this well-directed philanthropy.

It is not expected in this place, that we should give a detailed account of the different fashions of ventilation which are found in different systematic works on the subject. All kinds of ventilators or movers of air may be classed under two heads, the physical ventilator, and the chemical ventilator. Under the first head, come the bellows, or pump, the fan and the screw. Under the second, rarefaction, by heat, or combustion. The fanner and screw ventilators, with which persons in general, may be supposed to be less familiar than with the bellows, differ from the latter in their whole mechanism, being rigid, and composed of a blade or blades, so disposed as to strike the air in an oblique manner, and that continuously in one direction; hence commanding a uniform movement of the air thus disturbed. The fanner and screw may be looked upon as modifications of the same instrument. They are all described by Dr. Hutchinson, in the *Journal of Public Health.*

For all useful purposes, and as an agent, in some sort, always present, and readily brought into play, heat is the most efficient, and is that which gives rise to chemical ventilation. In fact, the questions of warming and ventilating apartments, are closely related, and interwoven one with another. There can be no ventilation where there is no movement of air, and this movement, apart from some mechanical contrivances of very limited use and power, is always imparted by heat—one portion of air rarefied by heat, rising and being replaced by a cooler portion, and so on. As long as we have a fire, we have a ventilator; and when the difference between the temperature of a room or hall of any description, and that of the outer air, is not enough to cause an active movement of the air, or where this is mixed with much watery vapour and gases, it is necessary to procure the aid of artificial heat, or a fire, in order to give the requisite movement to the air, and thus insure proper ventilation. With this view, a fire is made in the upper part or tower of the building to be ventilated, and flues are constructed to establish a communication between the room or hall in which persons are assembled, and the chimney of the fire-place, or a common central flue contiguous to and heated by this fire. The impure air is thus drawn, as it were, from the various rooms below through the prepared apertures at the upper part, or near the ceiling, and passes along the flues which converge at the central flue, above whence it finds exit into the open air, at such a height, and with such a rapidity of movement as to insure its diffusion through the atmosphere, and its dilution, without its exerting any injurious effects on the

people out of doors, or in fact, without the possibility of its reaching them.

By this means ought all places in which people congregate for any length of time, as in churches, school and lecture rooms, courts of justice, concert and dancing rooms, and theatres, or in which a number of persons are confined from infirmity and sickness, as in hospitals and other asylums, or for crime, as in prisons. The ingress air is to be introduced in quantity bearing a relation to the number of persons assembled, and to the quantity of the egress air through the discharging flues. An arrangement of this kind exists in the building of the Pennsylvania College, in Ninth Street below Locust Street. It must be a matter of general regret, that the teachers in other schools are not equally considerate of the health and comfortable feelings of their students, as those of the college have shown themselves to be.

This is a fit occasion to speak of the very useful volume of Mr. Bernard, on School Architecture in the United States. From page 142 to page 165, 2nd edition, the reader will find instructive details on the subject of warming and ventilating schools and other public buildings. The School Committee of Boston appointed a Committee to consider the subject of the ventilation of school-houses, and to report the means of remedying defects. They were farther authorized to ventilate any three school-houses in such manner as they should deem expedient. After visiting all the schools under the care of the Board, and instituting a variety of experiments, the Committee (Dr. Henry G. Clark, E.G. Loring, Esq., and the Rev. Charles Brooks,) made a report, which was received; and they were directed to adapt to each school-room the apparatus which they deemed best fitted to answer the purpose of proper ventilation in summer and winter. In order to be able to execute this order, the Committee applied to the city authorities for an appropriation of 4,000 dollars, which was readily granted, after an examination by the city authorities of the school-houses in which an improved ventilating apparatus had been introduced. The Committee acquitted themselves so successfully of their task, that in their final report, at the end of the year, they had the satisfaction to announce that the Grammar School-houses of Boston are now in a better condition, in respect to their ventilation, than any other public schools in the world. Statues and other honours have been decreed for much less services than were rendered by this Committee of three in Boston. They ought to have received at least an ovation from the grateful children and teachers in the public schools.

The Committee speak in favourable terms of Chilson's Furnace, and of a Ventilating Stove, and also of Emerson's ejecting and injecting ventilators. Mr. Emerson very properly insists on the admission of warm air into a school-room, as indispensable to its

proper ventilation; and he enforces his views on this point, by refusing to allow his ventilators to be put up in any school-house that is not, by some means, supplied with fresh warmed air. He objects, like most people who have attended to the subject, to the use of all such stoves and furnaces as emit their heat through and from *red-hot* iron; and he recommends, what large experience sanctions, that when anthracite coal is used, the stove or furnace in which it is burned, be lined with brick or stone.

Where there are *artificial lights*, especially if they be of a large size, and in public buildings, there ought to be special tubes of zinc or tin, connecting the burning lamp or gas-light with the exit flue. This tube ought to be large enough to surround the flame, or rather to form a complete cap for it; otherwise, only a small portion of the gas-light escapes by the tube, "There is one instance of an exit tube for gas, so elegant that it would grace any drawing-room, applicable for the lights over the mantel-piece, at each side of the looking-glass, introduced to notice by Prof. Faraday."

Dr. Hutchinson, who was quoted in the last paragraph, tells us, "It is an error to suppose that gas is more injurious to the constitution than candles; scientifically, the common means of lighting, whether by candles, oil, or camphine, are all *gas-lights*, (See *Combustion*, Art. II, p. 265. The work of a gas company is to take from the coal a certain product, and send it to our houses for combustion; when we burn the candle, &c., &c., we do, in the sitting-room, the work of the gas company, taking from the material the same product which the gas company sends to us in pipes; therefore, if there is any difference, it is in favour of gas-lights.

Mr. Hoskings, in his valuable work on the *Proper Regulation of Buildings in Towns*, points out a plan of ventilation, where there is no rarefaction of air caused by fire. Using his own words, "Rooms which have no chimneys in them, the passages and the staircase roads of buildings, may be ventilated, to some extent, by means of mere air-flues formed in the walls, and opening out over the tops of the buildings, if these be responded to freely, by open windows, or by proper inlets from the lower levels, so that there may be no inducement to the inner air to pass down the flues; and this effect is the more especially to be avoided, if there be other flues discharging, near to their outlets, spent or otherwise foul air, which it is not desirable to have drawn down into the building." "But, to prevent the possibility of misapprehension on this point, let it be well and clearly understood, that any success in promoting up-draught, with the effect of removing foul air from the inside of a house, will be most assuredly followed by down-draught in the chimney-flues, and consequently smoky chimneys if there be fire, and soot if there be none, unless ample provisions have been made for in-draught of air below,

to feed any fires, and to supply the place of what the up-draught may take away."

A full view of the subject of ventilation leads us to consider the importance of public squares and grounds, for recreation and exercise, in which a purer air can be breathed than it is possible to inhale in streets and common thoroughfares, and, at the same time, the mind is agreeably engaged in the sight of fountains, trees, shrubbery, and flowers, which ought to decorate and give variety to these places. What an agreeable and healthful transition for the crowded population, and particularly the juvenile portion, of the courts and alleys of every town, must it be, from their small gloomy abodes, with so much to offend the senses, and deaden sensibility, to the parks and grounds, laid out in walks and grassplots, shaded with trees, and ornamented with parterres of shrubs and flowers. The moral effect of such a change is hardly greater than the physical ones. The reservation of ground for purposes of this nature, ought to be a primary condition in the founding and laying out of every town, regarded in its purely economical aspect; for it concerns every community to preserve the health of its members, and to ward off disease from them; for in so doing, it induces a happier frame of mind, a cheerfulness which is alike conducive to individual happiness and public peace. It is no exaggeration to say, that he who makes a gift of public ground, for the purposes of exercise and recreation, is more entitled to the gratitude of his fellow men, than if he were to endow a hospital; inasmuch, as prevention of evils is both more humane, and more wise than their cure, or, what must necessarily be the case in a majority of instances, attempts to cure. A noble example of tasteful liberality in this way, was given some few years ago, by Mr. Joseph Street, of Derby, in England, in his giving away a piece of land, consisting of eleven acres, on the borders of the town. It is called the "Arborelum," and is tastefully laid out in grassplots, intersected by broad gravel walks, and planted with every variety of trees, shrubs, and flowers, botanically arranged. The corporation of Derby are the trustees. The public are only admitted, however, on two days in the week, Wednesdays and Sundays. The other days are reserved for annual subscribers, and for persons paying a sum equivalent to about ten cents admission. The income thence arising, is expended in keeping up the grounds and buildings. "The arborelum is much frequented, and has, already, produced a perceptible effect, in improving the appearance and demeanor of the working classes; and it has, doubtless, conferred an equal benefit upon their health."

Large subscriptions have been made in Manchester, and by parties living in other parts of the kingdom, for the purchase of ground, and laying it out and decorating it, for a public walk for

the inhabitants of the towns. Similar attempts are in progress in other towns in England. While we have something to be pleased with in the way of public squares in Philadelphia, it must be a matter of deep regret, that the value of the blessing has not been fully appreciated, else the original plan of Penn would have been carried out along the banks of the Delaware, and the noble range for recreation and tasteful adornment in Centre Square, would not have been cut up into pieces, nor Broad Street traversed by a rail road, in place of being planted with double rows of trees, and made the finest, as it would have been one of the longest promenades in the world.

But something more is required for the youth, and the industrious mechanics and working men, generally, of a city, than space for walking, for themselves and their families, important as these confessedly are. Grounds ought to be set apart for gymnastic exercises and various manly sports, under the supervision of competent instructors, and the legal control of persons appointed by the corporation. Here would the young men find a pleasant and legal means of expending their superfluous animal vivacity, and instinctive craving for bodily exercise and the excitement accompanying it, while the social principle would, at the same time, be gratified. Here, also, would the tired operative and mechanic find that change in his feelings, and the exhiliration attending many sports, which he too often seeks for in the tavern, and even places of worse repute.

Connected with these grounds, there might be readily instituted museums of natural history, models of machinery, and even specimens of the fine arts, thus creating associations in the minds of all who would resort to these places, of the most pleasing and instructive kind. Your reporter suggests these things as measures of health. Others might, with great truth, urge them as an affair of morals, and the religious missionary would be forwarded in his works, by their success in facilitating his own labours, and ameliorating the spiritual condition of those whom he visits.

Until within the last few years, it was thought that there was something in the Anglo-Saxon disposition and character, which unfitted the people of Great Britain and the United States from a due appreciation of the benefits and pleasures of public walks and gardens, and galleries of art, and museums, and that if these places were thrown open to the public, they would be injured, if not destroyed by the Vandal multitude. Experiments made in England, on a large scale, as by throwing open the grounds and the palace at Hampton Court, to the public of all classes, have dispelled this notion. The people in mass are rude in their tastes, and often grovelling in their pleasures; but it is because they have never had a choice of better, nor a standard to look up to.

The following incident related by Mr. Chadwick, (*op cit.*) is full of meaning, not only to the authorities in England, but to those in the United States, aye, to the municipal governments of Philadelphia, and its contiguous districts:

"On the holiday given at Manchester, in celebration of her Majesty's (Queen Victoria's) marriage, extensive arrangements were made for holding a chartist meeting, and for getting up what was called a demonstration of the working classes, which greatly alarmed the municipal magistrates. Sir Charles Shaw, the Chief Commissioner of Police, induced the mayor to get the Botanical Garden, Zoological Gardens, and the Museum of that town, and other institutions thrown open to the working classes, at the hour they were urgently invited to attend the chartist meeting. The mayor undertook to be personally answerable for any damage that occurred from throwing open the gardens and institutions to the classes who had never before entered them. The effect was, that not more than 200 or 300 people attended the political meeting, which entirely failed, and scarcely five shillings worth of damage was done to the gardens, or to the public institutions by the work-people, who were highly pleased. A farther effect produced, was, that the charges before the police, of drunkenness and riot, were on that day less than the average of those on ordinary days."

The Commissioners on the Health of Towns, tell us: "The great towns of Liverpool, Manchester, Birmingham, Leeds, and very many others have no public walks. Shrewsbury, Newcastle-under-Lyne, Derby, and a few more possess them." Their final recommendation is "that for the purpose of aiding the establishment of public walks, in addition to the legal facilities adverted to, the local administrative body be empowered to raise the necessary funds for the management and care of the walks when established.

Among the good effects of the searching sanatory investigations made in the last ten years in Great Britain, is the authorizing the corporate governments of the towns to remove the cellar population, or, at least, in a certain ratio and time, and to prevent, for the future, cellars being used for habitation, unless they be of certain dimensions, and with an area in front, and arrangements in the rear for privy, &c.

Coming more directly in connection with the subject of drainage and sewerage, would be that of privies and water-closets. Reference has been made to the latter in this relation, and the great neglect of suitable conveniences in Great Britain, pointed out. Various plans of water-closets are given in the replies to the questions of the Commissioners. Among others, is that of a self-acting one, which is described by its proposer, Mr. Austin, to be simple, strong, and economical, and adapted to the dwel-

lings of the poor. The substitution of water-closets for common privies is recommended; but to give effect to any general system of this kind, a regular and adequate supply of water is an indispensable condition.

It is some encouragement to more extended efforts in the same line, to learn that, in Haddonsfield and other places, the use even of the cheap water-closets has been introduced among the labouring classes, and that at Glasgow, in new houses, built for the working classes, the use of soil pans has been introduced. Mr. Fodern, architect, states, also, that there is an apparatus of this kind in use in 500 rooms in one public establishment. He says, that for the middle class of persons in London, "the existence of a water-closet is supposed to give an additional value to the house, of £5 (25 dollars) *per annum*.

Prevention of Diseases.—Again it is right to advert, even as a question of political economy and diminution of public expenses, to the benefits from an improvement in the public health, by attention to the causes of disease, which press with peculiar force on the poorer classes in all large cities. It is now placed beyond doubt, that the mere paving of streets will diminish previous mortality among those inhabiting the houses in these streets; and that a farther graduated reduction is procured, by the successive steps of drainage, sewerage, scavengering, and cleansing in general, and by the free use of pure water, and ventilation in the large sense, both external to the house and in its several apartments.

Dr. Lyon Playfair, taking the single county of Lancashire, which, indeed, includes the large cities Liverpool and Manchester in its bounds, shows, by tabular returns, that there are every year in Lancashire, 14,000 deaths, and 398,000 cases of sickness, which might be prevented, and that 11,000 of the deaths consist of adults engaged in productive labour. It farther shows, continues Dr. Lyon Playfair, that every individual in Lancashire lives 19 years, or nearly one-half of the proper term of his life, and that every adult loses more than ten years of life, and from premature old age and sickness, much more than that period of working ability. Without taking into consideration the diminution of the physical and mental energies of the survivors, from sickness and other depressing causes, without estimating the losses from the substitution from young and inexperienced labour for that which is skillful and productive; without including the heavy burdens incident to the large amount of preventable widowhood and orphanage; calculating the loss from the excess of births, resulting from the excess of deaths, or the cost of the maintenance of an infantile population, nearly one-half of which it swept off before it attains two years of age, and about 59 per cent. of which never become adult productive labourers; and with

data in every case much below the truth, I estimate the actual pecuniary burdens borne by the community in the support of removeable disease and death in Lancashire alone, at the annual sum of five millions of pounds sterling. I would draw attention to the columns respecting the number of preventable cases of death and sickness in Liverpool and Manchester, or in any other of the large towns, to show the immense amount of money which might be saved by proper sanatory arrangements."

Dr. Hutchinson (*op cit.*) sums up the loss to the city of London, growing out of the preventable deaths, 10,000 in number, and of the preventable cases of sickness, 20,000 in number annually, to be, for funerals, medical attendance, loss of wages, and expense of widows and orphans, £500,000, or $2,500,000. In addition to this, he estimates the loss to the community, at £1,000,000, or $5,000,000. He charges to the same account the sums that might be saved by consolidation of existing boards and companies, improved water supply, suppression of smoke nuisance, and revenue from sewer-water, amounting to more than another million of pounds, or five millions of dollars. This gives a sum of nearly three millions of pounds, or fifteen millions of dollars, lost by preventable disease and death, and otherwise bad sanatory economy, to the city of London. Mr. Banfield's estimate of loss to the United Kingdom, from these causes, amounts to fifty-five millions of pounds, or two hundred and seventy-five millions of dollars per annum.

Of the preventable mortality, a large proportion occurs in the early or infantile period. Parents, on the spot, would be startled at the announcement that the probabilities are against their child reaching its second year; and yet in Manchester, Mr. Robertson assures us, in his account of the statistics of mortality in that town, that for every 100 infants born, (in the township) upwards of 33 males and 26 females die within the year; whereas in Duretshire, the proportions are less than half these numbers. For the next period of life (from one to two years) the per centage of male deaths is 18, and of female deaths, upwards of 16; but in Duretshire, the proportions are less than one-fourth of this amount.

In Liverpool, the low sanatory state of which has been already mentioned, the proportion of deaths to the whole population, is as low as 1 in 28.75; and the average duration of life is only 20 years. Some have thought that the large emigrant floating population of Liverpool, chiefly Irish, contributed largely to the increased mortality, and low average of life in that city; but this is a fallacy exposed by Dr. Playfair, who shows that in both these particulars, they have greatly the advantage of the fixed resident population.

Not only is the mortality greatly increased by the preventable

causes of disease, but the physical vigour of the survivors is diminished by the same causes. The recruiting officers in the county of Lancaster, which used to furnish the best soldiers in the country, complained to Dr. Playfair, that the sons are less tall than the fathers, and that the difficulty is constantly increasing, of obtaining tall and able-bodied men.

Diseases of the respiratory organs, including phthisis, exist, according to Dr. Playfair, in the great manufacturing districts of Lancaster and Cheshire, to a greater extent than in any other part of the kingdom.

It has been estimated that the mortality among the poorer classes in England, might be reduced 20 per cent., by means within administrative control; to say nothing of the abatement or removal of other causes depending on their personal habits, which are intimately associated with those of the first mentioned class.

In the town of Preston, we learn, from the full and exceedingly interesting report of the Rev. J. Clay, that while the deaths in the whole town are 1 in every 29 persons, in streets which are described by him, where there is a neglect of sanatory measures, and the inhabitants of which are equally negligent, the proportion is 1 death in every 19 persons.

The large proportion of infant mortality in Preston, among the working classes, those least favoured on the score of sanatory protection, is an evident melancholy fact, bearing on the same argument. With the gentry the loss is only 17½ per cent. of infant life, (children under five years of age), while the operative's loss is 55.5 per cent. For the whole of England and Wales, the per centage of deaths is 39.1.

The average age of deaths, including children, of the different classes in Preston, is still farther confirmatory of the position laid down. For "gentlemen," it is 47 years; for "tradesmen," 32 years; and for "labourers," 18 years.

The different rates of mortality in the various districts of Liverpool, and a singular difference is found in most large cities, is both curious and instructive. In Rodney Street and Abercromby Wards, with upwards of 80,000 inhabitants, the mortality is below that of Birmingham,—the most favoured, in this respect, of the large towns of England—whereas in Vauxhall Ward, with nearly an equal amount of population, the mortality exceeds that which prevails in tropical regions. In the two first mentioned wards, 100 die for 177 who die in the Vauxhall Ward. The space for each inhabitant in Rodney Street and Abercromby Wards, is 32 square yards, and the proportion of the inhabitants living in courts and cellars, is 22 per cent.; while the space for each inhabitant in Vauxhall Ward is 19½ square yards, and the proportion of people living in courts and cellars, is 58 per cent. The inference is plain.

The deaths from pulmonary consumption in England and Wales are represented to amount annually to 36,000, of which one-half are said to occur in London. Dr. Guy attributes the great mortality from this disease, to be owing to "defective ventilation of houses, shops, and places of work. Next to this, in point of importance, is the inhalation of dust, metallic particles, and irritating fumes. One cause over which the poor themselves can exercise control, is the abuse of spirituous liquors, a very frightful source of consumption."

If we continue our retrospect by noticing the personal habits of the people, and which, though not to the extent commonly supposed, are independent of legislation and government control, we shall see that low health and positive disease are caused by insufficient food. Intemperance, by which is now understood in hygienic, and indeed in common language everywhere, addiction to the use of alcoholic drinks, commits throughout the whole civilized and Christian world, ravages on health and life, peace and morals, to a frightful extent. The sensibilities of a community to a practice so general and pernicious in all its ramifications, is exemplified, and we are afraid in no very extraordinary manner, by what occurs in the town of Ashton-under-Lyne, where 14,000 pounds sterling are spent annually in public houses and ascertained public carousals, while 2,000 only can be spared for education of the children. Seventy thousand dollars for drinks which inebriate, injure the health, cause numerous violent and fatal diseases, disturb the peace, and increase the taxes of the people, and only ten thousand dollars for education, or the means of moral and intellectual training, and acquiring the means of becoming useful citizens, exhibit a somewhat strong contrast. How are we here at home, in this matter. Is drinking and drunkenness encouraged by statute legislation and common law; and are not taverns multiplied more rapidly, by far, than churches or schools?

Intemperance, one of a variety of mental diseases, becomes, it is well known, a fruitful cause of insanity. This melancholy truth is familiar not only to the people of Great Britain and Ireland, and the United States, but to all the inhabitants of northern and middle Europe. It has forced itself upon the attention of French physicians and philanthropists; and remedies have been suggested by them for its abatement. Dr. Robinson, from late estimates, shows that intemperance alone causes one-fourth, and in conjunction with vice and sensuality in other forms, nearly one-third of the cases of insanity in England and Wales. The number of lunatics is stated to have been 26,576 on the 1st of January, 1845.—(*Journ. Pub. Health*, Vol. I, p. 291.)

But while we speak of intemperance as a cause of physical and moral disease and degradation, we must not forget the man-

ner in which the habit is so often created and sustained. A perverted state of the nervous system, by confined lodgings in dark, narrow, and unventilated streets, courts, and alleys, the sight of poverty, rags, and filth, and want of attention to neatness of attire and personal cleanliness; with the young, the want of proper exercise and amusement, and depraving example continually before them, go far towards inducing habits of drinking and of drunkenness. Hence, while we award credit to the benevolent efforts of those who would prevent intemperance by recommending, and themselves setting the example, of entire abstinence from all intoxicating drinks, it cannot be too often repeated, that in withholding causes of morbid excitement we must substitute those of healthy excitement. It is not enough to tell the ingenuous youth, to shun the bottle, and pass on the other side of a gin palace, or a groggery, or a beer house, but he ought, at the same time, to feel that he has more pleasant, as well as more safe enjoyments within his reach, and in which he can participate with his companions and friends of all ages, and often of both sexes.

The value of temperate habits among the poor, in prolonging life and diminishing sickness, has been exhibited in the comparison of temperance provident societies with other societies. The Teetotal Society in Preston, (of which however the numbers are rather small for the purpose of any general deduction,) presents, as we learn from the sanitary report of the Rev. Mr. Clay, not merely the smallest proportion of sick, but it also suffers the shortest average duration of illness. The annual mortality in the Temperance Provident Society (of London) during seven years, has averaged only 4 in 1,000. In agricultural labourers in the prime of life, the most highly favoured of the working classes, it is 8 per 1,000. Among healthy persons, generally, it is rated at 10 per 1,000. Among clerks, at the same age, it is no less than 23 per 1,000.

Akin to, and a part, one might say, of intemperance, on the part of parents, is the cruel practice of administering opiates to infants and young children. Ignorance, and the necessary absence from home, of the mother, may sometimes be extenuating circumstances in excuse. The Commissioners, in their Second Report, (p. 5,) express themselves in the following terms, on this subject:

"Our attention has been particularly directed to the prevalence of a very injurious practice of administering opiates to young children, calculated to increase the effect of physical causes of disease already pressing with great severity on the infantile part of the population. The habit, thus introduced, has become to an alarming degree prevalent, especially in manufacturing counties; although it occurs, to a considerable extent, in rural districts, and is not confined to infants suffering from disease, but is also ex-

tended to those in a state of health, in order to ensure their more easy management when the mothers are absent from home. The administration of these drugs is not confined to unlearned practitioners alone; it is but too generally adopted by the parents themselves, and by those persons under whose care infants are left during the hours when the mothers are engaged in their daily avocations. To the Report on the Large Towns in Lancashire, there is appended the evidence of druggists to the point, showing clearly, that the effects produced by the habitual use of such stimulants, are well known, both to the venders, and to the parents who administer them to their children. Physicians and surgeons in extensive practice in the manufacturing districts, give it as their decided opinion, that the terrible practice is productive of much disease and death, and that the constitutions of those who survive the effects of the narcotic, are, in many cases, ruined, and that the mental capabilities of such persons are materially impaired. As soon as the physical causes producing irritation and constitutional disturbance or disease, are removed, one of the great inducements to the use of these opiates will be diminished, and the moral evils lessened which now tend to the extension of the practice. Although an inquiry into this subject may not be considered to be strictly within the terms of our commission, we feel that we should be remiss in our duty, if we did not draw particular attention to the facts that have been laid before us, in proving the existence of a very serious evil."

This practice is not confined to England. It is common in some of the manufacturing towns of France, as in Lisle, for example. The fact was stated some years ago by your reporter, in his work on Regimen and Longevity. The French mothers often give their children a "composing potion," in order to be free, while the child is stupefied by the draught, to engage in a frolic at a dancing and drinking garden.

In Lancashire, where the opiates for infants are most freely used, it is common to begin with Godfrey's cordial, then when this loses its effect, to have recourse to "quietness," and finally, to use laudanum itself. This compound called "quietness" is sweetened, and flavoured with carraway seeds. It contains 100 drops of laudanum in one ounce.

One druggist in Manchester has sold these "sleeping stuffs" in such quantity, as to supply every week 700 families. His customers were entirely of the poorer class. Another druggist in the same district with the last witness, and living not many hundred yards from him, sold as much as would supply more than 500 families per week, allowing an ounce for each family.

Another certifies to mothers purchasing, of their own notion, laudanum, of which they will give to a restless child eight drops at a time, and this, like the compound already mentioned, is gra-

dually increased to three doses a day, or 24 drops. Still larger doses of opium are given in the "quietness;" the first dose of a small tea-spoon-full being increased until half an ounce, which contains 30 drops of laudanum, is taken by a child in the course of the day: another druggist said that he had known one ounce to be given at one dose to a child. The habit of administering opiates to the children, is begun when they are only three or four weeks old, and in many instances younger.

We must not suppose, that although habit blunts the sensibility to such a degree as to allow of enormously increased doses of these opiates being taken without causing immediate death, that the effects are not such as gradually to enfeeble the constitution, and destroy the health and life of the little beings. Children accustomed to the use of these drugs, become thin and emaciated; their eyes are sunken and fixed; the nose is pinched, and in fine, such children look exactly like little old wizened men and women. Convulsions, resulting from the use of these opiates, frequently carry them off. The practice is admitted to be a cause of greatly increased infantile mortality in Manchester, Urgan, Richdale, Preston, and other towns in Lancashire. In Liverpool, the use of opiates is less common, especially among the Irish, who give, instead, spirituous liquors to their children. The time is not very remote, since a similar folly on the part of parents, was not without its examples in this country. Every practitioner must have seen the effects of laudanum in cordials, in which opium was mixed, on young children to whom it had been given by their ignorant or misinformed parents.

It has been said that the use of opium has become too common of late years, among the working people in London and other places in England; but the precise facts are wanting to enable us to judge of the full extent of the alleged, and too probable evil.

As a matter of public hygiene, personal cleanliness ought to come within the catagory of the cleansing of streets and houses. It does not engage attention to the extent that its importance demands, whether we regard comfort or health. The neglect of ablution by the colliers of Lancashire, as recorded by Mr. Chadwick, in his Report, is, we fear, not without a parallel among many others in better circumstances, but whose skin does not tell the tale to the eye so forcibly as if it were blackened by coal dust. The question asked of a man engaged in coal mining, "How often do the drawers (those engaged in drawing coal,) wash their bodies?" the reply was: "None of the drawers ever wash their bodies—I never wash my body; I let my shirt rub the dirt off: my shirt will show that—I wash my neck and ears of course." "Do you think it usual for the young women (engaged in the colliery) to do the same as you do?" "I do not

think it usual for the lasses to wash their bodies; my sisters never wash themselves, and seeing is believing; they wash their faces, necks, and ears."

"When a collier is in full dress, in his white stockings and very tall shirt necks, very stiffly starched, and ruffles, his face and hands are clean?" "That is very sure, sir, but they never wash their bodies underneath; I know that; and their legs and bodies are as black as your hat."

One labourer remembered that a particular event took place, "because it was then he washed his feet." The effects of these habits are seen in the workhouse, in almost every pauper admitted. When it is necessary to wash them on their admission, they usually manifest an extreme reluctance to the process. Their common feeling was expressed by one of them, when he declared that he considered it "equal to robbing him of a great coat, which he had had for many years."

How many of those who walk our streets, in gay attire too, wear a garment of this kind over their skin? If the external surface of insects be covered with oil, so as to stop up their spiracles, and the skin of animals of a higher grade be covered by a layer of some impermeable substance, death results. It needs little physiological knowledge to make us aware of the injury done to the functions in a human being, by the skin being coated for years with the secreted oily and perspirable matter. The lungs, to which the skin is auxiliary, must be overtasked in consequence, and rendered more liable to disease. That distressing, and too often unmanageable affection, albuminuria or Bright's disease, is not unfrequently traceable to the impeded functions of the skin.

"It might savour of caricature," says Mr. Martin, one of the Commissioners on the Health of Towns, "were it asserted that, in regard to the labouring poor, it is only when the infant enters upon breathing existence, and when the man has ceased to breathe, at the moment of birth, and at the hour of death, that he is really well washed; yet such a statement would not be so far removed from truth as may at first appear. To the great mass of the people, and from the dawn to the term of life, the bath, as an article of comfort, luxury, and health, is hardly known, even in name."

A knowledge of the nature and extent of an evil is a step towards its removal. It is thus with the wide spread neglect of personal cleanliness, and the concomitant neglect of domestic cleanliness in Great Britain, among the larger number of her people, as ascertained by official investigation. The local governments, aided by the benevolence of individuals, have set about the erection of public baths, which, if not actually allowed to be used by all applicants gratuitously, are accessible on the payment of a very small sum. Already, by the use of these baths

and wash-houses of the poor, the truth of a remark of Sir Gilbert Blane is verified; viz.: "that the sensations connected with cleanly habits go to constitute some of the most precious gifts of civilization. A taste for them tends to give a distaste to degrading and grovelling gratifications; and the common saying that 'cleanliness is next to godliness' is founded in reason, inasmuch as it is conducive to moral purity, as well as to health and pleasure."

A primary condition, for free ablution, and regular washing of their clothes by the multitude, is, of course, an abundant supply of water. The requirements in this repect follow those for water as a drink, and are on a line with those for sewerage and cleaning of streets. In most of the chief towns of the United States, from the arrangements actually made, or in progress, there is a near prospect of an adequate supply for public as well as private baths. In Philadelphia there are bathing establishments to which access is easy for those who most require it; one in Moyamensing, in which both cold and warm bathing is furnished to the poor, and one in theNorthern Liberties, for the use of respectable females.

As yet the people of Christendom are behind the semi-civilized in different countries at the present time, and the ancients, particularly the Romans, in the general resort to the bath, and the readiness of access to this comfort and solace, by the people at large. Your reporter would venture to refer to a work of his, (*On Baths and the Watery Regimen,*) for a variety of details on the subject of bathing as a part of public hygiene. For the purposes of insuring the required purity of the skin, warm as well as cold water should be introduced into all bath-houses. A provision of this kind is necessary, also, to adapt the bath to differences of individual sensibility and vigour of frame, as well as to temporary indisposition and weakness, short of actual disease. Warm baths might be supplied, Mr. Hawksley thinks, to the working classes, at a low rate of about six cents each, if taken by 200 or 300 persons *per diem.*

Public swimming baths ought to be regarded in the light of one of the necessities of public hygiene. If regard be paid to the preservation of the lives of a large number of persons, which are annually lost by inability to swim, tuition in the swimming school might very well be put on the footing of a supplement to tuition in the primary and other public schools which are established and supported by the commonwealth.

A tepid swimming bath, which, at particular seasons, would be always necessary, of the dimensions of 80 feet long and 30 feet wide, and at an average depth of five feet, and supposing 50,000 gallons of fresh water admitted into it, could, in the opinion of Mr. Hawksley, be afforded at the remunerative price of 2d., or 4 cents for each individual using it, if used by 200 or 300 persons *per diem.*

By Sir Henry Dunkenfield's Act, the parliamentary standard charge for a warm bath, with one towel, for one of the working classes, is fixed at two pence, or four cents; and where the custom is in reasonable numbers, this sum is represented to be quite sufficient to give a profit beyond expenses.

"For instance, there were given to the destitute poor, in the three years, ending May 3d, 1848, at the free bath and wash-houses in Glasshouse yard, near the London docks, somewhere near 100,000 warm baths; every bather having from forty to forty-five gallons of clear water, and a clean towel, and the greater part of them having a small piece of soap also. The average cost was about a penny a head; the water being supplied gratuitously. The soap, however, cost more than would have been charged for the water."—(*Journ. Pub. Health.*)

Public baths and wash-houses were opened to the poorer people of Liverpool, on the 1st of June, 1842. The cost of the building, exclusive of the land, was between 11,000 and 12,000 dollars. The annual cost of the establishment, for the first two years, was a little over £284, or 1420 dollars. The mean annual receipt for two years, was 1200 dollars. Nearly 28,000 baths, cold and warm, and a few of vapour, were taken during the two years. The excess on the second year over the first was 5,000.

The hours of bathing are from 6 to 9 A. M., and from 6 to 9 P. M. for the men; and from 10 A. M. to 2 P. M., and from 4 to 5 P. M. for the women. On Sundays the only hours are from 6 to 8 in the morning, from Lady day to Michaelmas; and from 7 to 9, also in the morning, from Michaelmas to Lady-day for men.

The terms are	s. d.
For a warm bath, - - - -	0. 2, or 4 cts.
" Two or three children using the same water,	0. 2, or 4 "
" Cold and shower baths, - - -	0. 1, or 2 "
" Private cold baths, - - -	0. 6, or 12 "
" Private warm baths, - - -	1. 0. or 25 "

Dr. Reed, in his report to the Commissioners, in which he describes the means of ventilating different kinds of buildings, makes the following remarks on Ventilated Steam Baths:

"It is considered that in many places, the most effectual and economical addition may be obtained by the introduction of steam baths, especially where water is expensive. A limited supply of warm water, at a proper temperature, is provided so as to afford a shower bath, the occasional use of which, during the progress of the steam bath, renders cleansing and the use of the flesh-brush much more convenient than in the ordinary water or vapour baths."

To most persons a cold shower after the vapour bath, is both grateful and salutary, by removing the excitement, manifested by flushed face and throbbing of the arteries, which is so generally

produced by the vapour bath of the temperature at which it is usually administered.

It has been calculated that the waste water of a steam-engine of 500 horse power, would suffice to bathe, at an average temperature of 70 to 75 deg. F., 26,000 persons.

Access to and use of the public wash-house in Frederick Street, Liverpool, are obtained by poor women, especially those inhabiting cellars, and also those with large families having the smallest means of living, on the payment of one penny each, "for a length of time not exceeding six hours, and for the use of tubs, water, and having their clothes dried; each woman to have the choice of any tub vacant at the time of her coming; if there is not then room, to be served in the order of application." A matron is present to superintend the house, and to see that each washer uses a due proportion of soap and water, and to decide whose clothes shall go into the boiler together, also to direct who shall clean out the boiler on the clothes being taken out, and to see that it is immediately filled again. The clothes of the clean should be boiled together, and those of the dirty together; and in the second boiler, when it is not wanted, the infectious clothes. The precise reason for this division of the clothes, need not be told, for fear of giving offence.

An improvement in these wash-houses has been made, by an addition to them of large airy rooms, in which the infant children of the wash-women who come to wash their clothes, stay and are watched and nursed by a person employed for the purpose.

In New York a public wash-house has been established with entire success. Incidental but very decided benefit to the parties, is enjoyed by the avoidance of the dirt and litter, and confusion and disturbance to the whole family on a washing day, in the small and confined rooms of the poor. Most appropriate, therefore, is the recommendation of the Commissioners on the Health of Towns, that every facility be afforded to furnish ample supplies of water to public baths and wash-houses that may be established for the use of the poorer classes.

Nuisances.—Under the general head of Nuisances are included special obstructions to the public health, such as accumulations of dung and offals, pigsties, open privies, obstructed drains, pools of stagnant water, noxious smoke and other matters arising from manufactories, and especially the animal refuse invariably found in the vicinity of slaughter-houses, all of which act with so much more power in the midst of a dense population. In the township of Manchester, alone, five years ago, there were 77 slaughter-houses, (in many instances six or eight butchers killing in the same place,) but all of them were without regulations. In Bolton, Dr. Playfair found "several courts in which the middens attached to

slaughter houses were filled with the offals of the slaughtered animals, and had not been cleaned for at least two months." In other towns he found slaughter houses below dwelling houses, the smell of which was most insufferable; and in many of these dwellings the inhabitants looked pale and sickly, and diarrhœa frequently prevailed, although it was not met with in the courts contiguous.

Within the parish of Birmingham there were, a few years ago, more than 1600 pigsties; and in Liverpool a similar nuisance is quite common. Asses, hens, and pigs are not unfrequently kept in dwellings, and even in the sitting-rooms of the poor, in the last mentioned town.

Although a remedy for the abatement of most of these nuisances was obtainable by legal process, yet the expense attending a measure of this kind, and the dislike to appear in the character of an informer, rendered it, in a great measure, nugatory. Recently, however, by Act of Parliament, aggrieved parties can by an easy course, procure a removal of evils when duly specified. The *Nuisance Removal and Diseases Prevention Act*, passed in 1848, with the *Amended Statute* enacted the following year are great steps in the way of sanitary reform. They constitute, together with the *Public Health Act*, the beginning of a wise sanitary legislation, which promises the most beneficial results to the people of Great Britain and Ireland. The immediate beneficiaries are the poor and the labouring classes, but the wealthy and those in high station will also find a direct personal interest in the execution of these measures.

It is now enough for two or more inhabitant householders of a parish place, to send a notice, in due form, to certain bodies enumerated in the act, or to any Guardian of the Poor, setting forth the filthy or unwholesome condition of any dwelling house or building, to be a nuisance, or injurious to the health of any person, for such bodies or Guardian, after twenty-four hours' notice to some person on the premises, or in case of emergency, without delay, to enter and examine the premises, and if upon examination, or the certificate of two legally qualified medical practitioners, the existence of the nuisance is evident, the body or Guardian, acting in the case, shall thereupon lay a complaint before a justice, who shall summon the owner or occupier to appear before two justices to answer such complaint. Such justices are then required, if the existence of the nuisance be proved to their satisfaction, to make an order for cleansing or purifying such dwelling house or building, or for the removal or abatement of the cause of complaint, in such manner and within such time as shall be appointed. Non-compliance on the part of the owner or occupier, subjects him to a penalty of ten shillings, (two dollars) for each day of default, and the Guardians or other body

mentioned in the Act, shall by themselves or their servants, enter the premises, and cleanse them, or remove the cause of complaint, and do all that may be necessary for carrying such order into effect.

The same course is to be pursued in case of complaint of "any foul and offensive ditch, gutter, drain, privy, cess-pool, or ash-pot, or any ditch &c., kept or constructed so as to be a nuisance, or to be injurious to the health of any person.

So, also, if upon any premises are found swine, or an accumulation of dung, manure, offal, filth, or refuse.

"Or that upon any such premises, (being a building used wholly or in part as a dwelling house,) or being premises underneath any such building, any cattle or animal are or is kept, so as to be a nuisance to, or injurious to the health of, any person."

Any dung, manure, or other thing removed, may be destroyed or sold; and if sold the proceeds shall be paid to or retained by the Guardians, and shall be applied by them in aid of the poor-rate of the place in which the removal shall have been made.

Among the most grievous nuisances to which many neighbourhoods have been subjected to in London and other large towns, is burial-grounds not adequate for complete sepulture. Indeed, the practice intra-mural interment must altogether be regarded in the light of a nuisance. After the information in this subject collected and disseminated by Mr. Walker and Mr. Chadwick, it seems impossible that advocates of the old practice should anywhere be found. A healthy public opinion is now, almost everywhere prevailing in favour of cemeteries at some distance from towns or densely populated spots.

By the amended Nuisance Removal Act, the General Board of Health, whose constitution and powers will soon be mentioned, is empowered to make inquiries respecting the state of certain parochial burial-grounds, and having attained the requisite information, to frame schemes for providing new burial-grounds in parishes, with due regard for the various contingencies involved in this subject, and to submit their scheme to Parliament.

The Public Health Act already referred to, establishes a general or central executive body, and local bodies for carrying out its provisions. The first consists of a General Board of four persons, of whom one is a medical man, Dr. Southgood Smith; the second, of Local Boards, consisting of the town councils. The General Board is to appoint superintending inspectors, and the Local Boards shall appoint a surveyor, inspector of nuisances, clerk, and treasurer, and other officers. The Act contains clauses pointing out the steps to be taken for the carrying out of a system of surveys, sewerage, drainage, and water-closets, and keeping the same in repair; also for cleaning, the abatement and prevention of nuisances, the regulation of slaughter houses, lodging

houses and cellars, the width of streets, laying out pleasure grounds, and producing water supply.

The second part of the statute for the removal of nuisances and the preventing or mitigating the effects of diseases of an epidemic, endemic, or contagious character, provides, that under an order from the Privy Council in Great Britain, and the Lord Lieutenant and Privy Council in Ireland, the Board of Health in England, and the Commissioners of Health in Ireland may issue such regulations for the prevention or mitigation of any prevailing diseases as they may deem expedient.

Various measures are specially enumerated, which the Board may direct for the purpose; such as cleansing streets, purifying and ventilating houses, churches, and public buildings, the removal of nuisances, and the speedy interment of the dead.

The Board of Health published two notifications at considerable length on the prevention, as well as mitigation and cure, of cholera. In the second of these, dated October 31st, 1848, we read: "Among the results of the sanitary inquiry, one of the most important was that which established the identity of the track of cholera with the track of typhus, and other epidemic diseases. The track of both is marked by the domain of filth." Mr. Hooper, describing such places as Three Tuns Court, where there are one hundred and fifty inhabitants with only one privy, and that without a covering, the fluid soil running down the court in front of all the houses, says: "These are the constant abodes of fever, and these are the places where cholera prevailed!" To the same effect is the experience of Mr. Wagstaff, also quoted by the Board. He says: "I have, at the present moment, many cases of fever in the very places in which cholera was most prevalent."

In Edinburgh, the like causes produced the like results. Particular spots designated by the Board are the perennial abodes of the epidemic diseases that affect Edinburgh and Leith, and to these localities chiefly the cholera of 1832 confined its ravages. There are instances in which this disease has returned to the very same house which it ravaged in its former visitation.

The Nuisance Removal Act does not take cognizance nor indicate the means to be adopted for the removal of manufactures or other processes in the arts which are either positively detrimental to the health of the neighbourhood, or seriously interfere with its comfort. The recommendation of the Commissioners for the Health of Towns yet remains to be acted on, viz.: that after such a period as it may be deemed admissible to fix, the provisions in local acts for preventing the escape of dense black smoke from furnaces and steam-engines in towns be made general. They also recommend that these provisions be applied, as far as it is practicable, to steam-boats usually plying within the limits of any city or town subject to the operation of such act.

The remarks following these recommendations are worthy of repetition in this place: "In respect to other nuisances from manufactories, they produce too great injury to health, independently of their effect upon property, and are too difficult of control by the present state of the law, to admit of their being passed over in silence in this report. Noxious products, evolved in manufacturing operations, may be dispersed by chemical and other means now well known. Too much importance has been attached to the mere influence of lofty chimneys in removing to a distance and diluting the noxious fumes which many manufactories evolve. In themselves, they in no way destroy the emanations which are conveyed into them; these are discharged, as much as before, into the external atmosphere; and experience has proved, that even very lofty chimneys, on which large sums have been expended, do not necessarily insure that amount of admixture with the common air which is essential to prevent the most injurious consequences on their deposition, even at very considerable distances. The extent to which nauseous, acrid, and other noxious fumes from manufactories often destroy the atmosphere of numerous dwellings, and sometimes of whole streets, is abundantly explained in the reports of the Commissioners."

It is justly said, in this report, "that there appears to be no good reason, if a private dwelling be made subject to inspection under circumstances affecting, or supposed to affect, the public health, why manufactories, which induce evil to a much greater extent, should not be subject to the general cognizance of the local administrative body, which should be empowered, in certain cases, to take the necessary legal proceedings for the abatement of such nuisance."

The Commissioners recommend, (and such a recommendation ought to have formed part of the Nuisance Removal Act,) "that in cases where complaints shall be substantiated, that the inhabitants of any house, street, or district in towns are injuriously affected by the noxious exhalations of any factory, power be given to the local administrative body to ascertain the cause of such exhalations, and to take legal proceedings for the abatement of the evils, in the event of such evils not being removed on due representation."

French sanitary legislation is more precise, and, at the same time, comprehensive, on the subject now before us. It distributes into three classes all establishments which are adverse to comfort, health, and safety, and describes in what manner each is unhealthy and interferes with comfort.

Establishments of the first class cannot be allowed in the vicinity of private habitations; their erection was only permitted by a decree from the king in council, and is now allowed by corres-

ponding authority. To this category belong the manufactures of sulphuric, hydrochloric, and nitric acids, as well as that of beer, ashes, and various chemical products; melting establishments of fat on open fire, workshops for the preparation of taffety, leather, and varnished tissues; also of knackers, tripe-men, and cat-gut manufacturers, and of those in which are prepared animal black, glue, Prussian blue, blood-manures, *aseille*, (a kind of dye,) and starch; factories of fireworks, and lucifer matches, and fulminating compounds. The reasons for placing these together under the most dangerous class are, vitiation of the air, by the disengagement of emanations inimical to health, the risk of fire, and the intolerable odours which they emit. Hence they are only allowed at all after long and multiplied formalities. Objections of all those within a radius of three thousand feet from the proposed establishment are heard and discussed; first, in the hearing of the prefect of the department; then the papers are transferred to the Council of Health, which appoints a committee of inquiry to visit the spot, and hear the objections. This report is then discussed by the Council, which afterwards returns all the documents to the prefect, with its opinion as to propriety of granting or not granting the permission asked. If there is opposition to this permission, as is commonly the case, the question is referred to the council of the prefecture, whose decree is communicated to the proprietor or manufacturer, to either continue his operations or desist from them. If the former, all the documents are referred to the Minister of Commerce, and a decree from the executive head of the government is granted or withheld. If withheld, and the manufacturer has already constructed his building, he is ordered to pull it down, and not to use it for the purpose intended: this has often occurred.

The second class of establishments of the manufacturing kind include those, the removal of which from an inhabited district is not absolutely necessary, but which it is fit should only be permitted after a suitable inquiry, to show that it is not a nuisance to the neighbourhood. To this category belong lime or plaster kilns, when they are in constant operation, high-pressure steam-engines, gas-works, currieries, tanneries, hat factories, founderies, manufactories of sulphate of iron and zinc, of sulphate of soda in close vessels, phosphorus, imitation jewellery, bituminous mastic, chandleries of tallow and of stearine, and workshops for the scraping and cleaning of copper vessels.

None of these can be called actually unhealthy; but many of them are disagreeable, and seriously annoy, either by their smoke, their noise, the danger of fire, or by their offensive smell. The request, in form, for authority to erect such an establishment must be addressed to the prefect or sub-prefect, who transmits it to the mayor of the commune, that he may make an inquiry, *de*

commodo et incommodo. The Council of Health then gives its opinion in the manner already indicated.

The third class comprises all those establishments which may be in operation in the vicinity of dwelling houses without inconvenience, but which must nevertheless be submitted to the inspection of the prefect for his authorization. They are, lime and plaster kilns, used not more than a month in the year, brick-yards, potteries, and tile-works, manufactories of gelatine and isinglass, crucible founderies, dye-works, &c.

There is nothing absolute in this classification, inasmuch as that a particular manufactory, the processes of which are improved, may pass from one category to another less restricted. Thus, for instance, the Councils of Health have allowed the transfer of "*aseille*," treated directly by ammonia, from the first to the third class; and the melting of suet in close vessels takes it out of the first class; and so, also, lime made with coke passes from the second into the third class.

In the volume previously referred to, (*Traité de Salubrité*, &c.,) from which we have obtained this outline of French sanitary legislation on certain classes of manufactories and workshops, which are properly nuisances, or which may become so, there is a list, in a tabular form, of all those requiring a formal permission for their construction and working by the proper authorities; giving, first, their kind, then the inconveniences to which they give rise, then the class to which each belongs, and, lastly, the date of the decree by which it was arranged. In this catalogue there are enumerated 87 of the first class, 106 of the second class, and 77 of the third class.

The damage done by the black smoke, in a city like London, vomited forth from so many breweries, distilleries, and various chemical and other manufactories, is well put in the testimony on this point of Mr. Corbitt, before the Health of Towns' Commissioners, when he says: "People are less willing to have expensive paper-hangings, and nice paintings, and nice upholstery, because every thing gets so black in London. If we could induce persons to be more desirous of having their things in better order, we should furnish the means of employment for a great number of persons who are not so well occupied now."

In the Journal of Public Health, Vol. II., p. 129, are exhibited diagrams of a Smoke-Consuming Apparatus, for the use of which a company has been formed in the city of Manchester. This apparatus differs from previous ones, in its being a machine which performs the operation of taking the smoke from the flue of the boiler, just before its entrance into the flue or shaft of the chimney, and conveying it into the hottest part of the furnace, where it is entirely consumed; thus accomplishing an achievement hitherto considered, by some men of great scientific eminence, as

all but impossible; that is, making a steam-engine furnace literally "to consume its own smoke."

Akin to the abatement and prevention even of the nuisance of black smoke from bituminous coal, is the removal of the offensive, and indeed of every kind of smell from urine and fœces, so as to enable persons to remove them without inconvenience from their places of deposit to the country, where they constitute the most fertilizing manure. It has been computed, that if the whole drainage of London could be so employed, at a sufficient distance from the city, the annual increase in the value of the land to which it would be applied would exceed half a million pounds sterling, or two millions five hundred thousand dollars. An estimate by Mr. Smith, a distinguished English agriculturist, places this question in a strong light. It rates the annual average value of the excreta of each individual at £1; so that, taking the whole population at twenty-eight millions, we are positively, says the writer whose language we are now repeating, *throwing away*, every year, that which is equivalent to *twenty-eight millions* sterling. The actual saleable "value in Belgium of the excreta is thirty-seven shillings for each individual, and at this rate, we may be said to be annually depositing the worth of fifty-one millions sterling in the ocean that washes our shores."

According to Dr. Lyon Playfair, a pound of urine is capable of increasing the production of grain by an equal weight; so that, even allowing for some exaggeration in this estimate, the human urine at present wasted in the British kingdoms would serve to produce more than all the grain required for the consumption of their entire population, besides affording, through its fertilizing influence on lands at present imperfectly tilled, or not tilled at all, a source of employment to a superabundant labouring population.

Various chemical substances have been introduced to public notice of late, as endowed with a disinfecting power. Their claim has not, as yet, been substantiated; and all that can be positively admitted is their de-odorizing property, which makes them susceptible still of extensively useful application. MM. Montfalcon and Poliniére (*Traité de Salubrité*, &c.) advert to the disinfection, as they call it, of urine and fœcal matters. This may, they tell us, be readily performed by throwing a layer of animal charcoal and a portion of the hydrated peroxide of iron into a privy. In an instant, as it were, the fœtid emanations and the ammoniacal gas are destroyed.

The French writers just quoted pass in review a number of interesting questions of public hygiene; such as the sanitary condition, and means of amending it, of workshops and factories, colleges and other educational establishments, prisons, hospitals, barracks, churches, theatres, &c.

Under the head of sources of special infection, they treat of

intra-mural cemeteries, knackeries, and slaughter-houses. In these last two, and especially in the very last, a wonderful reform has been made in Paris; and the abattoirs in that city are parlors and drawing-rooms compared with the common slaughter-houses in most of the other cities of Europe and of the United States.

MM. Montfalcon and Poliniére treat, also, of the adulteration of food, and especially of meat, milk, bread, and drinks, and of alimentary condiments and confectionary; and they terminate by a chapter on the adulteration of medicines. It would not be right to advert to this last theme without giving praise to Dr. T. O. Edwards, of Ohio, for the zeal, perseverance, and tact with which he eventually succeeded in carrying through Congress his bill for the appointment of inspectors of all imported drugs, and thus to check, if not stop entirely, an extensive system of deception and fraud in the sale of articles, on the purity and genuineness of which depend the chances of safety for the sick, and much of the value of clinical medicine.

It would be rank injustice to the scientific ability and dauntless zeal, we might say, heroic devotion, of many eminent French writers and investigators in public hygiene, to conclude this report without distinct mention of that admirable series of hygienic records and improvements contained in the *Annales d'Hygiene et de Medicine Legale*. With the forty-three volumes of this periodical, from its beginning to the present day, before him, your reporter is only restrained by the already great length of his present offering to the College from an analysis of the leading papers in the *Annales*. It was in these that the indefatigable Duchatelet made some of his most valuable contributions; such as those on the sewers, the slaughter-houses, and knackeries of Paris, and the real effects of certain trades and manufactories on the persons employed in them. This eminent French hygeist could not only impart a lively interest to the subjects of his investigations, but for the time make the reader forget the repelling parts, whether of a physical taint, as in the case of the sewers, or of the moral turpitude, as in the case of *Prostitution* in the city of Paris.

In the same rank we may place Chevalier, who, with Duchatelet, were worthy successors of the benevolent D'Arcet. The works of Levy and Lendi, on Public and Private Hygiene, although not full on the first of these divisions, merit notice in this place, and will be found useful references to inquirers on the subject. Of the like value will be found the instructive volume of Dr. Dunglison, entitled Human Health, or Elements of Hygiene. Contributing to the same end are the two works by your reporter referred to in preceding pages. He may be pardoned for introducing them here, as offering thereby a partial apology for past remissness in regular reports on Public Hygiene to the College,

inasmuch as they show that he has not been either an inattentive or idle observer of the various topics which come within the scope of sanitary inquiry.

Military and Nautical Hygiene—parts of Public Hygiene—would, of themselves, merit, and almost of necessity demand, separate reports, rich as these several themes have become in the last half century by the world-circling possessions of England, and their descriptions by English physicians, and by the immense public and mercantile marine which is scattered over every sea. France, by her conquest of Algeria, at an immense cost of blood and treasure, has also taken lessons in colonization, with its military posts and climatic exposures, from which some of her military surgeons and physicians have culled instructive details.

From the barracks to the prison the transition is not great nor forced. Of late years, prison hygiene, as bearing on the different systems of prison discipline, has assumed an importance so great as to make its results determine, very much, the vexed questions which have agitated the public mind on the construction and arrangement of penitentiaries, and the kind and degree of punishment, the amount of labour and rest of the prisoners.

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